KONICA MINOLTA

Applications for Vehicle Evaluation
Color and Light Measuring Instruments

6

Object color

Light source color

The Standard in Measuring Color & Light

Giving Shape to Ideas

Vehicle evaluation application examples

■ Object color
■ Light source color

Appearance

TAMS™

License plates

Spectrophotometer CM-700d

Exterior paint
(Orange Peel / Distinctness of Image)

Appearance analyzers
Rhopoint IQ-S `DOI`
Rhopoint IQ Flex20 `DOI`

Automotive window glass

Spectrophotometer CM-700d
(Spectral reflectance measurement of glass)
Spectrophotometer CM-5
(Spectral transmittance measurement of glass)

**Door mirrors
Door handles**

Side mirror warning indicators
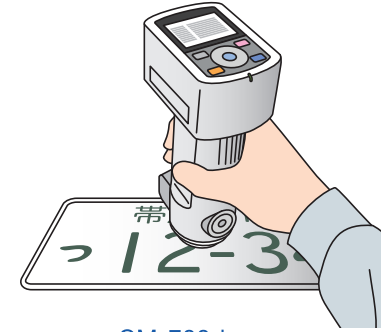
Spectrophotometer CM-M6   2D luminance colorimeter CA-2500A

Brake lamps, signal lamps, fog lamps, hazard lamps, etc.

Illuminance colorimeter
CL-200A   (For vehicle inspections)
2D luminance colorimeter
LumiCam 2400 Color/Advanced■
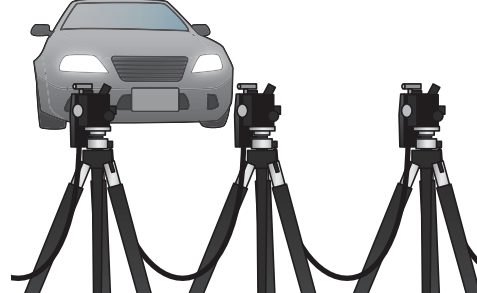
Exterior paint
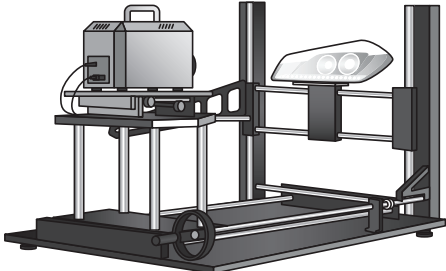(Metallic pearlescent, etc.)

Spectrophotometer
CM-M6

≫ EXTERIOR [Exterior paint]

Headlamps (High illuminance)

Illuminance meter T-10A (Multi-point measurement)
(For light distribution measurement)

2D luminance colorimeter
LumiCam 2400 Color/Advanced■

Aluminum wheels   **Tires**

Appearance analyzer
Rhopoint IQ Flex20 `Gloss, Haze`
Colorimeter CR-400

Colorimeter CR-400

Dashboards, Interior parts

Spectrophotometer **CM-700d**
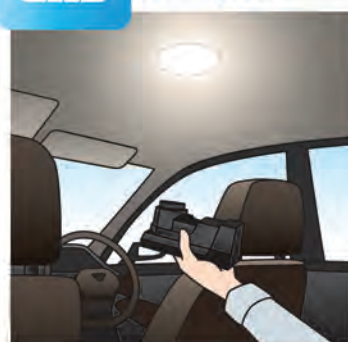(Color control of interior parts with curved surfaces and shapes)

Spectrophotometer **CM-25cG** Gloss
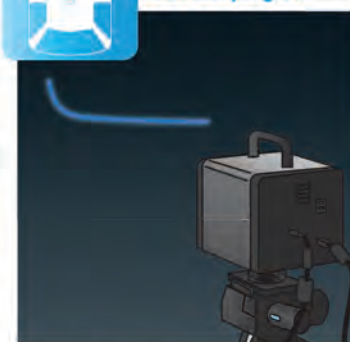(Color control of parts with differing textures)

Spectrophotometer **CM-26d**

Interior illumination: Ceilings, etc.

Spectroradiometer **CL-500A**
Spectral radiance system **DTS 140**
Illuminance meters **T-10MA**
(Multi-point measurement)

Interior illumination: LED strip lights

2D colorimeter luminance colorimeters
CA-2500A
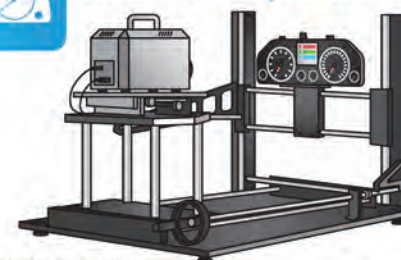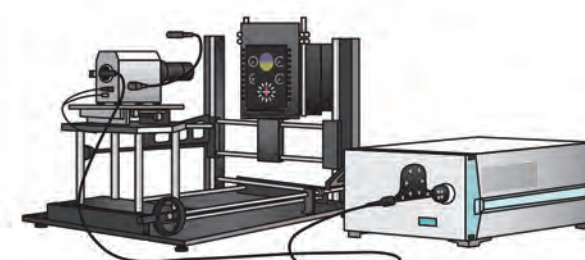**LumiCam 2400 Color/Adv**

Mirrors (Interior)

Spectrophotometer **CM-700d**
(For surface reflectance measurement)

Instrument panels

2D luminance colorimeters
LumiCam 2400 Color/Advanced
Spectral radiance system DTS 140

Piano Black finish

Spectrophotometer **CM-25cG** Gloss
Appearance analyzer
Rhopoint IQ-S Gloss, Haze

›› INTERIOR [Car Interiors]

Brightness and chromaticity checks of light sources
(Handheld for field measurement)

Luminance meters **LS-150/LS-160**
Luminance colorimeters **CS-150/CS-160**

Vehicle-mounted cameras

Spectradiometer
CL-500A

Colorimeter
CL-200A
(Environmental evaluation/ Calibration light source evaluation)

Luminance colorimeter
CS-200
(Camera light source evaluation)

■ Energy/Spectral evaluation of near-infrared LEDs
Spectral radiance measurement system **DTS 140**■
(Measurable wavelength range: 380 - 1040 nm)
Spectral irradiance measurement system ■
(Measurable wavelength range: 300 - 1100 nm)

Plated parts (Curved/Small surfaces)

Appearance analyzers
Rhopoint IQ Flex20 Gloss, Haze
Rhopoint IQ-S Gloss, Haze

Car navigation/Central information displays

2D luminance color meters **CA-2500A**
LumiCam2400B Color/Advanced■
(For black mura evaluation)

Display Color Analyzer **CA-410**
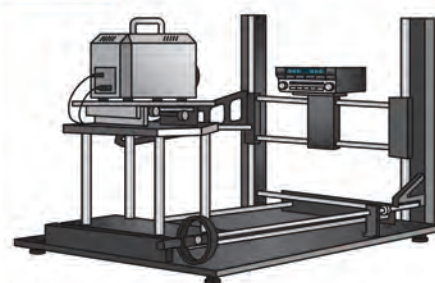
Spectroradiometer **CS-2000A**
Spectral radiance system DTS 140■

Spectrophotometer **CM-700d**
(For surface reflectance measurement)
Appearance analyzer
Rhopoint IQ-S Gloss

Uneven illumination of AC/audio switches

2D luminance colorimeters
LumiCam 2400 Color/Advanced■
Spectral radiance system DTS 140■
Spectroradiometer **CS-2000A**

Steering wheels

Spectrophotometer
CM-700d

Car seats and ceiling materials

Colorimeter
CR-410

Interior door trim

Spectrophotometer
CM-700d

Heads-up displays

2D luminance colorimeter **CA-2500A**
LumiCam2400B Color/Advanced■

■ Laser light source measurement

Spectral radiance measurement systems **DTS** ■
CAS 140CT-HR
CAS 120-HR

Object color

Spectrophotometers

CM-26d

The next generation of portable sphere spectrophotometer, offering unprecedented accuracy and inter-instrument agreement (IIA), usually reserved for laboratory-grade instrumentation. Featuring a horizontal alignment, a design convenient for measuring flat or large samples and narrow spaces.

CM-700d /CM-600d

These easy-to-operate handheld spectrophotometers condense the latest optical technologies from Konica Minolta plus the high precision and functionality of Konica Minolta's benchtop models into a low-cost, compact and highly portable size. They are perfect for measuring colors of automotive interiors. Offers both ø8 and ø3 mm measurement areas. (CM-700d)

CM-25cG

This 2-in-1 model simultaneously measures chromaticity and gloss. Its form and function are suited for managing the color and gloss of vehicle interiors. Moreover, it offers two different measurement areas.

Color Ø8 mm/ Ø3 mm
Gloss Ø10 mm/ Ø3 mm

CM-M6

Compact, lightweight model for multiple (6) angle measurement. The vertical body incorporates a "Double-Path Optical System" that can stably measure curved surfaces and small targets, making it the tool of choice for measuring exteriors.

Measurement area   Ø8 mm

CM-512m3A

This multi-angle spectrophotometer is for measuring metallic and pearlscent colors commonly used in automotive exterior paints. A single measurement simultaneously illuminates targets at 3 angles -- highlight (25˚), flat (45˚) and shade (75˚) -- for reading colors. It can also measure colors on curved surfaces. ø12 mm measurement area.

CM-3700A

This reference spectrophotometer packages Konica Minolta's state-of-the-art optical technologies to ensure high accuracy. It is a wise choice for users who apply stringent controls in their pursuit of high quality.

CM-5

Despite being compact in size and light in weight, this all-in-one spectrophotometer comes with a top port and a large color LCD that simplify sampling, measurement and analysis. It is perfect for measuring the transmittance of windshield glass before installation.

Colorimeters

CR-400

Top-seller around the world. De facto standard in handheld colorimeters. ø8 mm measurement area.

CR-410

This handheld colorimeter features a wide aperture that is highly suited for measuring samples with uneven surfaces or patterns. ø50 mm measurement area.

Appearance analyzers

Rhopoint TAMS™

Rhopoint TAMS™ is a new way of quantifying appearance quality inspired by a four-year collaboration between Rhopoint, Volkswagen AG and AUDI AG. This innovative new technology models the human perception of surface appearance quality, providing new parameters that revolutionize the understanding and communication of visual appearance information.

Rhopoint IQ-S/IQ Flex20/Flex60

These meters can measure gloss, reflection haze, image clarity and rspec. The Rhopoint IQ-S series is capable of evaluating reflectance characteristics and surface conditions that conventional glossmeters cannot. The IQ Flex features a small aperture probe for measuring small components and curved surfaces.

Light source color

Illuminance meters, luminance meters and spectradiometers

CL-500A

The CL-500A can be used to inspect and control the quality of indoor LED lighting. As a handheld device, it facilitates measurements around door steering wheels, under seats and other hard-to-get-to vehicle interiors locations. It is lightweight, compact and suited for color-rending index evaluation of light sources, and conforms to both JIS and DIN. The CL-500A can measure and display the color rendering index, photopic illuminance (lx), scotopic illuminance (lx), correlated color temperature (K) and chromaticity (xy) of light sources.

Colorimeter

CL-200A

This compact and lightweight colorimeter is perfect for measuring the chromaticity of white LEDs. It can measure and display the correlated color temperature (K), chromaticity (xy), photopic illuminance (lx), tristimulus values (XYZ), dominant wavelength and excitation purity of light sources.

Illuminance meters

T-10A/T-10MA

These highly accurate illuminance meters conform to JIS Class AA and DIN Class B. They can accurately measure next-generation PWM-controlled lighting sources. They can also be incorporated into testing systems for multi-point measurements.

Spectral radiance measurement systems

DTS 140

This system uses a telescopic probe to measure the spectral radiance of vehicles and displays. It can measure microscopic areas as small as ø75 µm.

Spectroradiometers

CS-2000A /CS-2000

This spectroradiometer employs Konica Minolta's proprietary optical design and signal processing technologies to accurately measure luminance as low as 0.0005 cd/m^2 and chromaticity.

Luminance colorimeters

CS-200

This luminance colorimeter adopts a spectral fitting method to measure luminance and chromaticity to a degree of accuracy near to that of spectroradi-ometers.

CS-150 /CS-160

These luminance colorimeters are designed and built for ease of use and accuracy. They are compact, lightweight, easy to operate and capable of measuring an area of ø0.4 mm (CS-160).

Luminance meters

LS-150 /LS-160

These luminance meters are designed and built for ease of use and accuracy. They are capable of measuring luminance of about 1,000,000 cd/m^2 (LS-160).

Display color analyzer

CA-410

This analyzer can measure the luminance and chromatic flicker of vehicle-mounted displays used for car navigation systems, etc. at high speed and to a high degree of accuracy.

2D luminance colorimeters

CA-2500

This analyzer measures the luminance mura and chromaticity mura of vehicle-mounted displays in 2 dimensions at high resolution. It is suited for development and testing since it can perform measurements, analyses and evaluations very efficiently in a short amount of time. It can accommodate targets of varying size owing to a wide array of interchangeable lenses.

LumiCam 1300 Color/Advanced ■

This instrument can easily measure the luminance and chromatic distribution of automotive meters and other targets in a short amount of time. It incorporates 6 filters and is highly accurate, which makes it perfect for measuring DRL (Daytime Running Lights).

CAS Series ■

Our series of high-end spectrometers each present innovative features that allow the systems to be used universally in a broad range of applications and functions. These systems conveniently change into spectroradiometers when users attach absolute calibration and optical probes. The high resolution (HR models) spectroradiometers combine the demands of high spectral resolution and short testing times for sophisticated and price-sensitive measurement tasks in production and laboratory environments and are offered with a PTB traceable calibration. These HR spectroradiometer models combine the demands of high spectral resolution and short testing times for sophisticated measurement tasks in production and laboratory environments

High Resolution

LumiCam Series ■

High Accuracy

Our imaging photometers and colorimeters are designed to handle a large variety of applications and functions. They utilize rapid capture technology to get a complex reading of color distributions and luminance very quickly. Easy integration into existing applications with minimal training to operate. Our software makes analyzing the collected data simple in both two dimensional and three dimensional spaces. Ideal for versatile automotive test applications, e.g. measurement of luminance and color distributions of displays and control elements or uniformity analysis of flat panel display screens.

Lumicol 1900 ■

These photometers measure luminance and chromatic distribution at high speed. They are suited for adjusting and inspecting automotive display panels along production lines.

High speed

LumiTop Series ■

The LumiTop-Series combines the accuracy of the well-known CAS Series with the obvious advantages of imaging colorimetry. Our innovative design merges an RGB camera and a flicker-diode with the high-end spectroradiometer CAS140 CT / D. Using the extremely accurate spectral information of the CAS 140 measurements as reference, guarantees spectroradiometric precision across the whole 2D image.

Applications for Vehicle Evaluation

Color and Light Measuring Instruments

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Product design, manufacture/manufacturing
management, calibration, and service

ISO 14001
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