KONICA MINOLTA

Applications for Vehicle Evaluation

Color and Light Measuring Instruments

3

The Standard in Measuring Color & Light

Giving Shape to Ideas

Vehicle evaluation application examples

- Object color
- Light source color

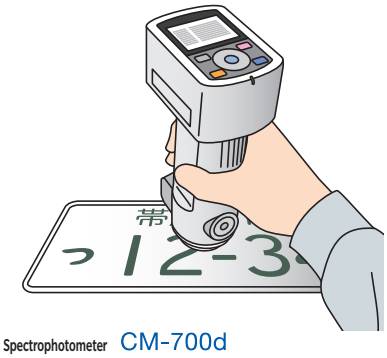
Automotive window glass

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

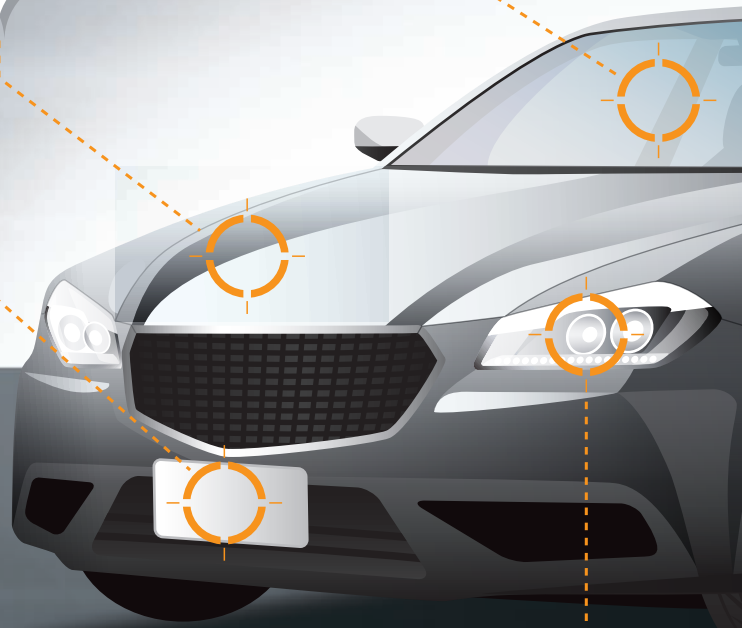
Exterior paint (Orange Peel / Distinctness of Image)

Appearance analyzers
Rhopoint IQ-S DOI
Rhopoint IQ Flex20 DOI

License plates

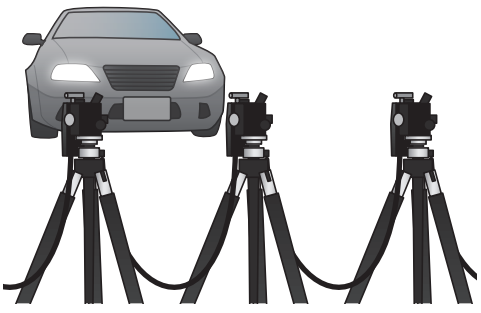


Spectrophotometer CM-700d

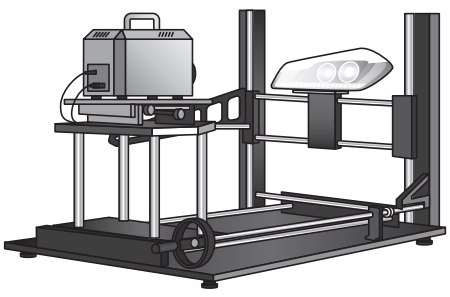


EXTERIOR [Exterior paint]

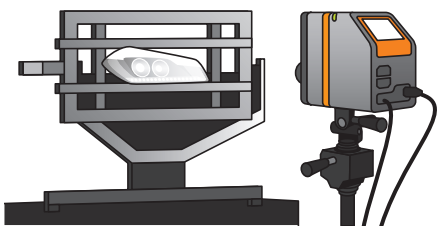
Headlamps (High illuminance)



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



2D luminance colorimeter
LumiCam 1300 Color/Advanced■

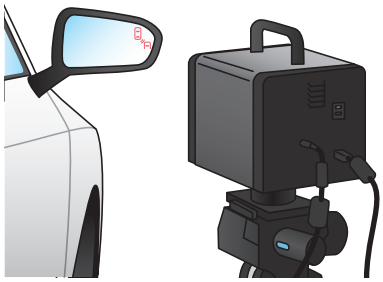


Near-Field Measurement System
PM-NFMS™

Door mirrors
Door handles

Spectrophotometer CM-M6

Side mirror warning indicators



2D luminance colorimeter CA-2500A

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

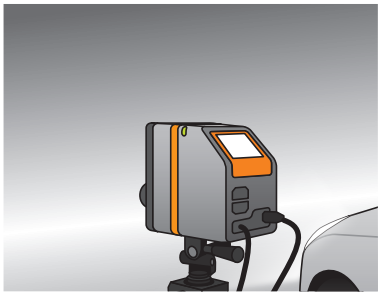
Illuminance colorimeter
CL-200A (For vehicle inspections)

2D luminance colorimeter
LumiCam 1300 Color/Advanced■

Exterior paint
(Metallic pearlescent, etc.)

Spectrophotometer CM-M6

■Headlamp light distribution
Road illuminance distribution



2D luminance colorimeter
ProMetric® I series ◆
Analysis software PM-HL™

Aluminum wheels

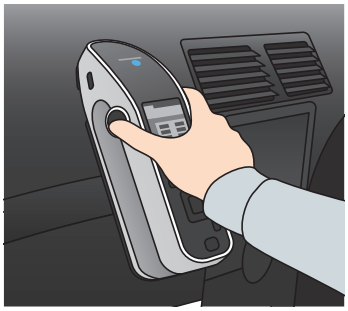
Appearance analyzer
Rhopoint IQ Flex20 Gloss, Haze
Colorimeter CR-400

Tires

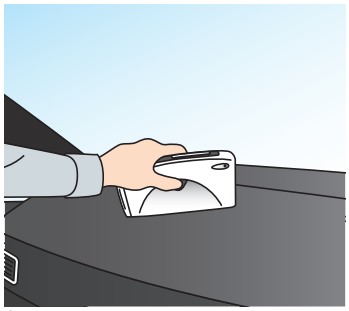
Colorimeter CR-400

Dashboards, Interior parts

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

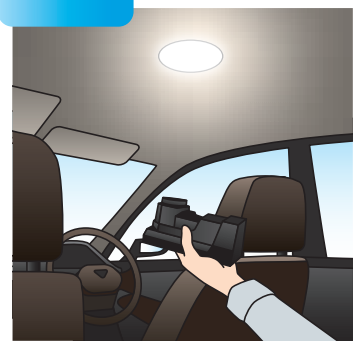


Spectrophotometer CM-25cG Gloss
(Color control of parts with differing textures)



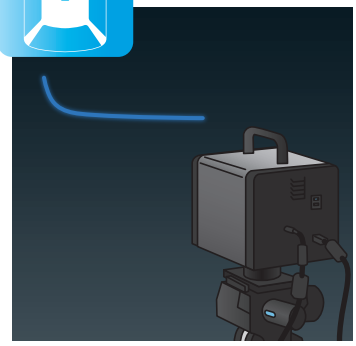
Glossmeters
MULTI GLOSS 268A/UNI GLOSS 60A Gloss

Interior illumination: Ceilings,etc.



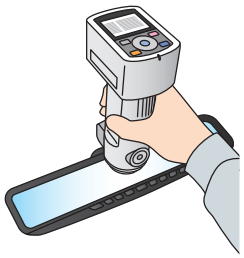
Spectroradiometer CL-500A
Spectral radiance system DTS 140■
Illuminance meters T-10MA
(Multi-point measurement)

Interior illumination: LED strip lights



2D colorimeter luminance colorimeters
CA-2500A
ProMetric® I Series◆

Mirrors (Interior)



Spectrophotometer CM-700d
(For surface reflectance measurement)

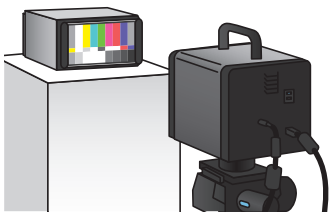
Piano Black finish

Spectrophotometer CM-25cG Gloss

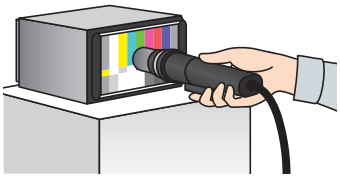
Appearance analyzer
Rhopoint IQ-S Gloss, Haze

INTERIOR [Car Int

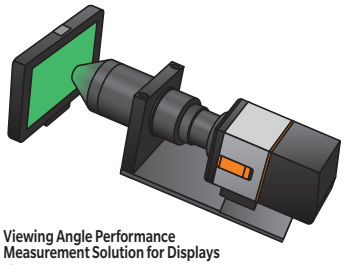
Car navigation/Central information displays



2D luminance color meters CA-2500A
LumiCam 1300 Color/Advanced■
(For black mura evaluation)
ProMetric® I Series◆
(For black mura evaluation/
scratch detection and other evaluations)



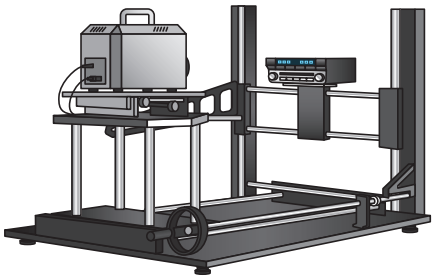
Spectroradiometer CS-2000A
Spectral radiance system DTS 140■
Display color analyzer CA-310



Viewing Angle Performance
Measurement Solution for Displays
Conoscope Lens
(For ProMetric® Y/I Series)

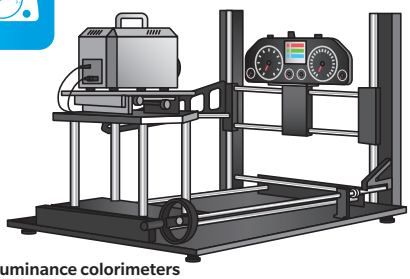
Spectrophotometer CM-700d
(For surface reflectance measurement)
Glossmeter MULTI GLOSS 268A Gloss
Appearance analyzer
Rhopoint IQ-S Gloss

Uneven illumination of AC/audio switches

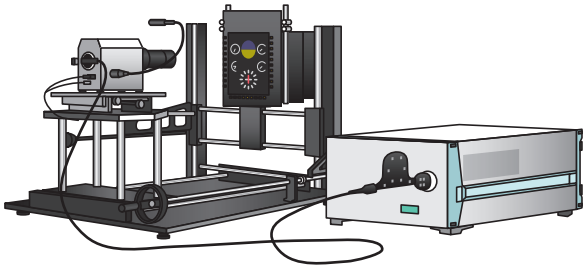


2D luminance colorimeters
LumiCam 1300 Color/Advanced■
ProMetric® I Series◆
Spectral radiance system DTS 140■
Spectroradiometer CS-2000A

Instrument panels

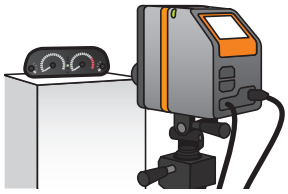


2D luminance colorimeters
LumiCam 1300 Color/Advanced ■
ProMetric® I Series ◆



Spectral radiance system DTS 140 ■

■ Luminance, chromaticity mura and flaw detection of indicators, etc.



2D luminance colorimeter
ProMetric® I Series ◆
+ Automobile visual inspection software TrueTest™

Brightness and chromaticity checks of light sources

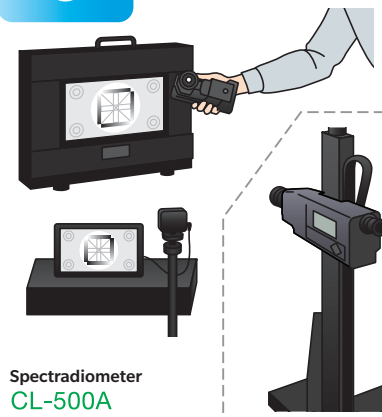
(Handheld for field measurement)

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

Plated parts (Curved/Small surfaces)

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

Vehicle-mounted cameras



Spectradiometer
CL-500A

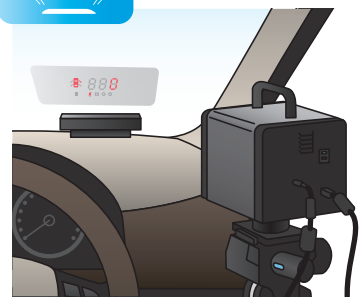
Colorimeter
CL-200A
(Environmental evaluation/ Calibration light source evaluation)

Luminance colorimeter
CS-200
(Camera light source evaluation)

■ Energy/Spectral evaluation of near-infrared LEDs

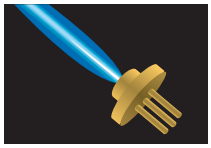
Spectral radiance measurement system DTS 140 ■
(Measurable wavelength range: 380 - 1040 nm)
Spectral irradiance measurement system ■
(Measurable wavelength range: 300 - 1100 nm)

Heads-up displays



2D luminance colorimeter CA-2500A
LumiCam 1300 Color/Advanced ■
ProMetric® I Series ◆

■ Laser light source measurement

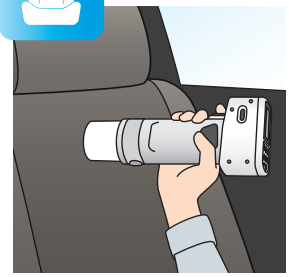


Spectral radiance measurement systems DTS ■
Uses CAS120 spectroscope
(Measurable wavelength range: 360 - 830 nm
Pixels: 2,048 x 14
Spectral resolution: 2.2 nm
Data point interval: 0.3 nm)

Steering wheels

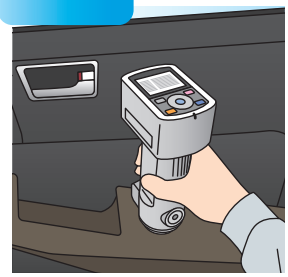
Spectrophotometer
CM-700d

Car seats and ceiling materials



Colorimeter
CR-410

Interior door trim



Spectrophotometer
CM-700d

Lineup of color and light measuring instruments

Object color

Spectrophotometers

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-2500c

This 45° a:0° spectrophotometer employs a newly developed vertical viewing system with a 45° ring-shaped illumination to realize high measurement stability and reproducibility. The 45° a:0° geometry makes it perfect for measuring colors of automotive interiors. ø7 mm measurement area.

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.

Glossmeters

MULTI GLOSS 268A/UNI GLOSS 60A

These instruments measure the gloss of target surfaces. They are perfect for gloss control operations intended to reduce the degree to which dashboards reflect off of windshields. They also feature a wide measurement range (0.0 - 2,000 GU) that can accommodate anything from plastic to shiny metallic surfaces.

Appearance analyzers

Rhopoint IQ-S/IQ Flex20

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-rendering 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.

Products marked with ■ are made by Instrument Systems.

Instrument Systems
KONICA MINOLTA Group

Products marked with ◆ are made by Radiant Vision Systems.

RADIANT
VISION SYSTEMS

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/m² 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 spectroradiometers.

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/m² (LS-160).

Display color analyzer

CA-310

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-2500A

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).

High accuracy

ProMetric® I /Y Series ◆

These series of photometers measure luminance and chromatic distribution at high resolution. They can also detect missing pixels and uneven photometric performances of vehicle-mounted displays when used in conjunction with the optional TrueTest ™ software. Applicable to inline use.

* Y series photometers measure only luminance distribution.

High resolution High speed

Conoscope Lens for Viewing Angle Performance Measurement Solution for Displays ◆

(For ProMetric® Y/I Series)

This lens can be attached to a ProMetric® Y or I instrument to measure the luminance and chromaticity of vehicle-mounted displays and films such as AR coatings, across a ±58° angle viewing cone, in a single shot and at high speed. The lens can be detached in order to use the ProMetric® instrument as a 2-dimensional luminance meter.

* The 2-dimensional luminance meter shown here.

Lumicol 1900U/F ■

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

Near-Field Measurement System

PM-NFMS™ ◆

This near-field light distribution measurement system can analyze the luminance and chromatic characteristics of headlamps at every angle, in a short amount of time and without taking up a lot of space. The system consists of a ProMetric (Y/I series) photometer, a 2-axis goniometer and software.

Automatic appearance inspection software

TrueTest™ ◆

This software automates the visual appearance inspections of FPDs, backlight units and other products along production lines. Supported by both the ProMetric® I/Y series.

Applications for Vehicle Evaluation

Color and Light Measuring Instruments

SAFETY PRECAUTIONS

For correct use and for your safety, be sure to read the instruction manual before using the instrument.

- **Always connect the instrument to the specified power supply voltage. Improper connection may cause a fire or electric shock.**

Certificate No : LRQ 0960094/A
Registration Date : March 3, 1995

Certificate No : JQA-E-80027
Registration Date : March 12, 1997

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https://konicaminolta.com/instruments/network

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