

Luminance Chromaticity Uniformity Analyzer

UA-20C

Luminance Uniformity Analyzer

UA-20Y

**High-resolution & High-speed measurement supports
production lines analysis and evaluation for optical professionals**



24.5-megapixel high resolution image, Measurement of subtle luminance changes and uniformity



General-purpose type for
chromaticity measurement

Luminance and Chromaticity
Uniformity Analyzer

UA-20C

Luminance measurement dedicated
machine with Y filter

Luminance Uniformity Analyzer

UA-20Y

Features

High resolution measurement

- Equipped with 24.5-megapixel CMOS camera
- Effective pixels: 5328 x 4608 ultra-high resolution measurement
- High-precision uniformity measurement with ultra-high resolution

[Minimum resolution per pixel at the shortest distance]

Standard lens: 0.024mm, wide-angle lens: 0.091mm, telephoto lens: 0.017mm

Resolution comparison image

Conventional
product UA-10(1.3M)



UA-20(24.5M)



Product line-up for various measurement situations

- Two types of measurement models
 - UA-20C : Luminance and chromaticity measurement type
Compatible with various evaluations such as chromaticity and dominant wavelength(WD)
 - UA-20Y : Luminance measurement type
Equipped with a Y filter for highly accurate luminance measurement



Measurement value

- Luminance(cd/m²)
- Chromaticity(x, y / u' , v')
- Color temperature(K), Deviation
- Dominant wavelength, Excitation purity
- RGB



Measurement value

- Luminance(cd/m²)

- 3 types of lens variations

Standard lens
UA-20CS/UA-20YS



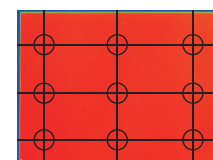
Wide lens
UA-20CW/UA-20YW



Telephoto lens
UA-20CT/UA-20YT



Large screen display MURA
Wide lens



Standard spot evaluation

Vehicle meter
Telephoto lens



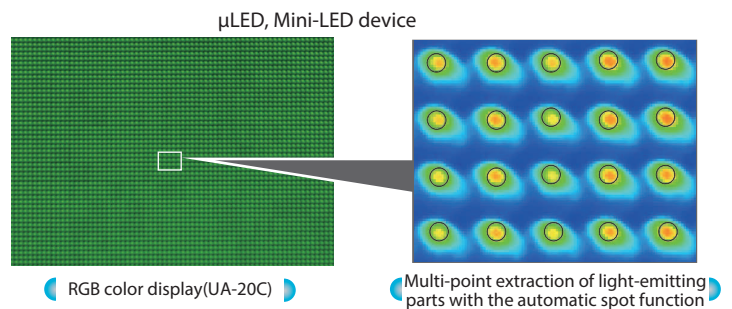
Random spot evaluation

High resolution, wide range, and high quality Supports production line inspection and performance evaluation of development and design

Wide range luminance measurement

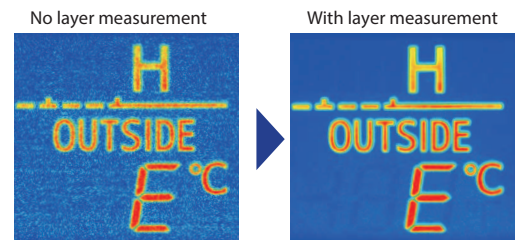
- Luminance measurement range : 0.01 - 50,000cd/m²
- High brightness measurement with optional external ND filter

magnification	measurement range
1%	5.0 - 5,000,000cd/m ²
0.01%	500 - 50,000,000cd/m ²



Various measurement condition functions

- Trimming of measurement area(ROI): Randomly set the measurement ROI area
- Image processing ROI: Measure data in a specified range
- Layer measurement: ideal for measurements with a wide dynamic range
- Frequency setting: Supports stable measurement of pulse emission light source

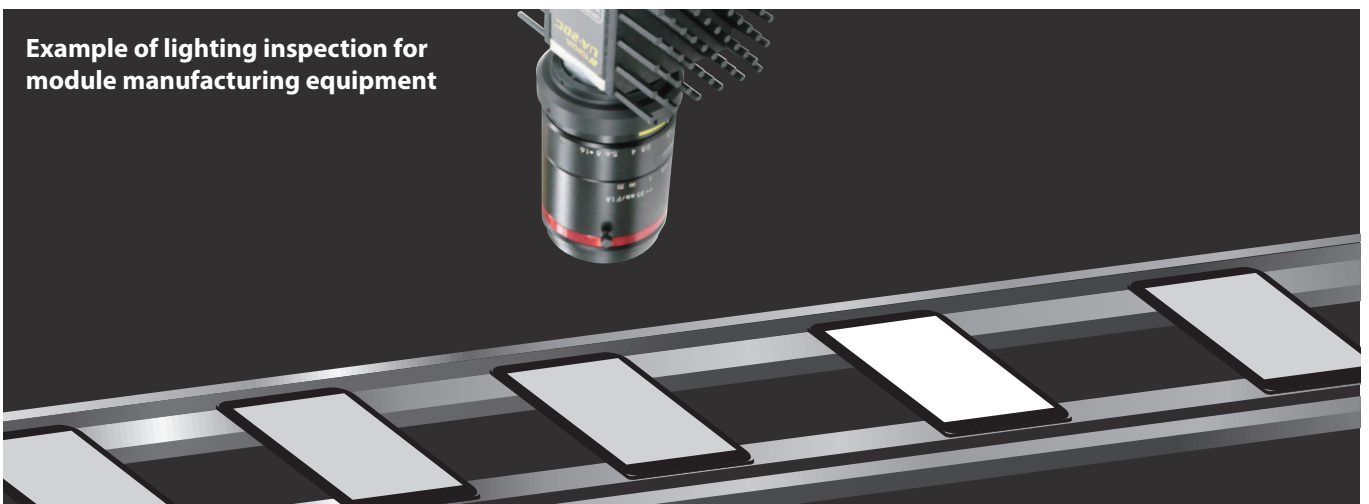


Best specifications for production processes

- Palm-sized compact measuring instrument
- Body mass: Lightweight specification of about 500g
- Standard with SDK for external control
- GigE High-speed communication
- Realized high durability and long life with a drive-less equipment



Example of lighting inspection for module manufacturing equipment



Application

Various analysis programs for UA-20

Colorimetric image software (standard accessory)

CI-100



Collecting, storing, and displaying measured values of UA-20 main body control and measurement data from PC. Efficient evaluation can be performed from measurement to data analysis by various information processing.

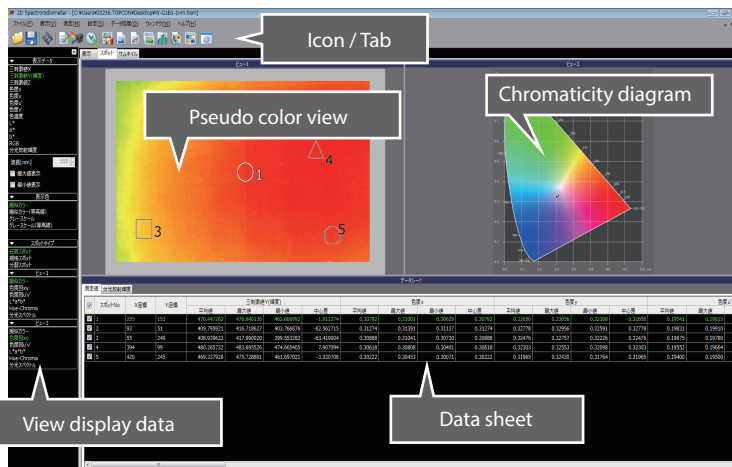
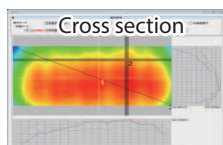
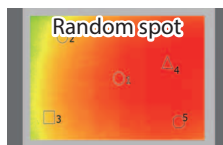
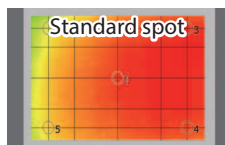
Evaluation function

- Pseudo color
- Standard spot
- Random spot
- Auto spot
- Cross section

Measurement data function

- Luminance (cd/m²)
- Chromaticity (x, y / u', v')
- R, G, B
- Uniformity

*Chromaticity and RGB evaluation is only for UA-20C



Optional software

Black MURA



BlackMURA provides display quality analysis to DFF's vehicle OEM workgroup BlackMURA standards.

Evaluation function

- Uniformity/gradient characteristics evaluation
- Luminance homogeneity
- Absolute and relative gradient value
- Luminance contrast and luminance homogeneity contrast
- Report function
- CSV/Image, measurement data automatic output

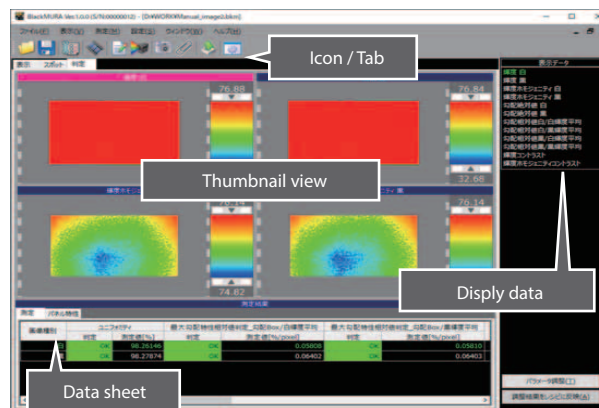
Camera profile evaluation

- Center and four corners comparison
- Calculation of resolution
- Calculation of focus

Center and four corners comparison



Calculation of focus

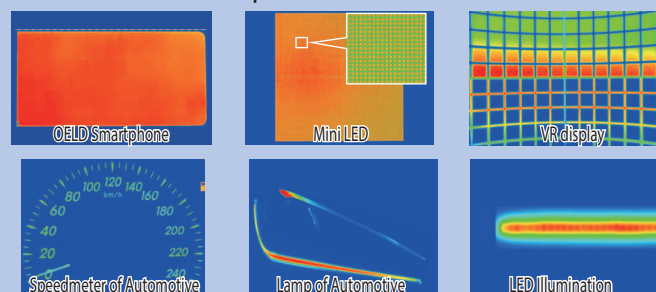


Usage

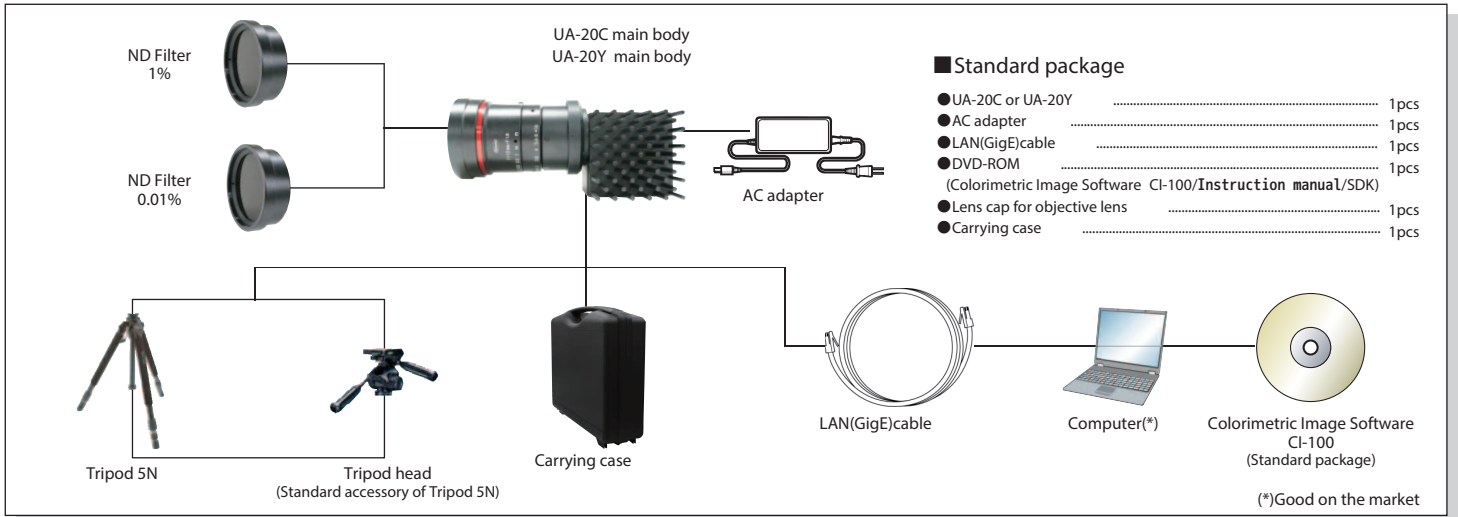
- Mura evaluation of luminance and chromaticity of LCDs and related materials, OLEDs, QDs, micro LEDs, etc.
- Evaluation of emission distribution characteristics of automobile meter panels and interior and exterior lighting
- Evaluation of luminance and chromaticity MURA of the light emitting part of LED lighting and OLED lighting



Measurement example



System diagram



Optional accessories

● ND filter 1% / 0.01%



Neutral density filter for measuring higher luminance than the measuring range of instrument.

ND filter	measurement range
ND filter 1% S/T	5.0 - 5,000,000 cd/m ²
ND filter 1% W	5.0 - 5,000,000 cd/m ²
ND filter 0.01% S/T	500 - 500,000,000 cd/m ²
ND filter 0.01% W	500 - 500,000,000 cd/m ²

* : The high luminance side is designed for standard illuminant A up to 1000cd/m², anybeyond that, based on the linearity of the photo detector.

● Tripod 5N

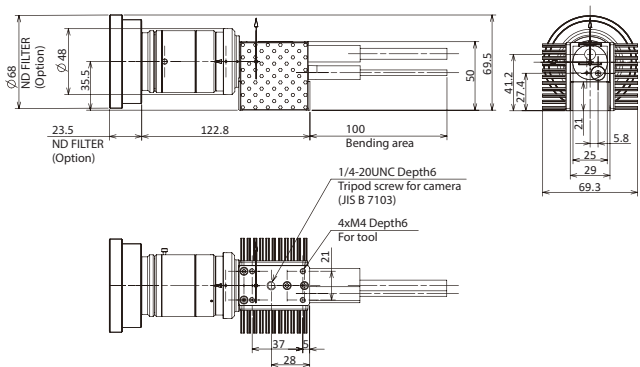


Simplifies collimation of measurement object

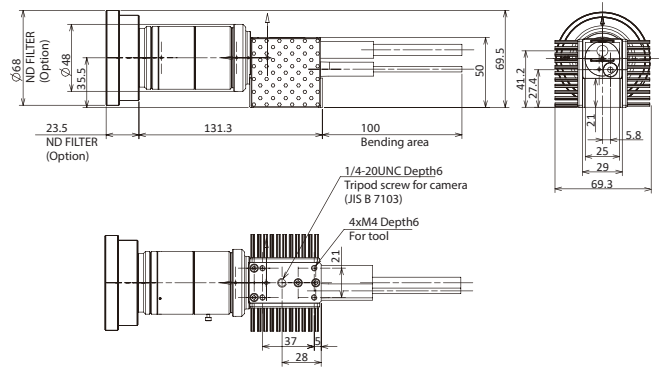
- Max height : 1835mm
- Min height : 585mm
- Folder length : 810mm
- Leg section : 3steps
- Weight : About 4.8kg including Tripod head

External dimensions

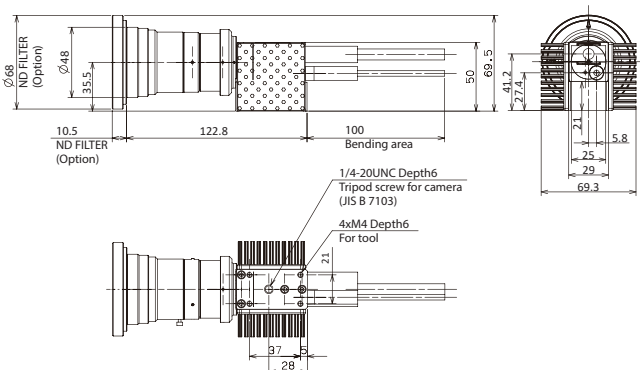
◆ UA-20CS/YS



◆ UA-20CT/YT



◆ UA-20CW/YW



Specification

Model	UA-20CS / CW / CT	UA-20YS / YW / YT
Photo detector	24.5 million-pixel CMOS Image sensor	
Objective lens	Fixed focal lens UA-20CS/YS : f=35mm UA-20CW/YW : f=12mm UA-20CT/YT : f=50mm	
Number of measurement point	5328×4608	
Data bit	12bit	
Luminance measurement range	0.01 - 50,000cd/m ²	
Luminance linearity ^{*1,2}	±2% (0.1cd/m ² -) ±3% (0.01 - 0.1cd/m ²)	
Chromaticity accuracy ^{*1,2}	±0.003 (0.1 cd/m ² -) ±0.007 (0.01 - 0.1 cd/m ²)	-
In-plane unevenness	luminance : ±2%	
uniformity ^{*1,3}	Chromaticity : ±0.003	-
Repeat characteristic ^{*1}	luminance : 0.3% (2σ) Chromaticity : 0.002 ^{*4}	
Measurement time	Fastest about 3 sec. ^{*5}	Fastest about 3 sec. ^{*5}
Stability	luminance : ±1%	
Repeatability	luminance : ±2%	
Temperature characteristic	luminance : ±3% (reference : 20°C, 0 - 40°C)	
Humidity characteristic	luminance : ±3% (Humidity : 80% RH or lower, No condensation)	
Interface	LAN (GigE)	
Power supply	AC 100 - 240V (50/60Hz)	
Power consumption	Photo detector DC24V 4.8VA (without PC)	
Operating conditions	Temperature : 0 - 40°C, Humidity : 80%RH or lower (No condensation)	
Storage condition	Temperature : -5 - 50°C, Humidity : 85%RH or lower (No condensation)	
Outer Dimensions	UA-20CS/YS : 122.8(L)×69.3(W)×59.5(H)mm UA-20CW/YW : 131.2(L)×69.3(W)×61.0(H)mm UA-20CT/YT : 131.3(L)×69.3(W)×59.5(H)mm	
Weight	UA-20CS/YS : about 470g UA-20CW/YW : about 510g UA-20CT/YT : about 490g	

*1: Standard illuminant A, *2: Evaluated on the center of the CMOS, *3: Reference: Center of the CMOS, *4: Max - Min value, *5: This value varies depending on conditions of use.

Measurement area : Standard type (UA-20CS / UA-20YS)

Measurement distance (mm)	300	400	500	1,000	1,500	2,000	2,500
Display size (inch)	6.0	7.9	9.8	19.5	29.3	39.1	48.9
Horizontal (mm)	115.3	151.0	187.7	375.4	563.1	750.8	938.5
Vertical (mm)	99.7	130.6	162.3	324.7	487.0	649.3	811.7

Measurement area : Wide type (UA-20CW / UA-20YW)

Measurement distance (mm)	250	400	500	1,000	1,500	2,000	2,500
Display size (inch)	14.9	22.8	28.5	57.0	85.5	114.0	142.5
Horizontal (mm)	285.6	438.0	547.5	1094.9	1642.4	2189.8	2737.3
Vertical (mm)	247.0	378.8	473.5	946.9	1420.4	1893.9	2367.4

Measurement area : Telephoto type (UA-20CT / UA-20YT)

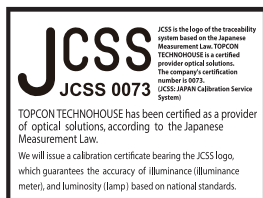
Measurement distance (mm)	300	400	500	1,000	1,500	2,000	2,500
Display size (inch)	4.3	5.7	7.1	14.0	20.9	27.9	34.9
Horizontal (mm)	82.6	109.5	136.9	268.1	402.2	536.3	670.3
Vertical (mm)	71.5	94.7	118.4	231.9	347.9	463.8	579.8

*The measurement distance is from tip of objective lens to the measurement target.
* Above values are 90% area of FOV.

Operating conditions

OS	Windows [®] 10 Pro (64bit)
CPU	Intel [®] Core [™] i7-11700 or higher
Memory	16GB or higher
HDD	500GB or higher More than 3GB free space is necessary in the system drive (that is a drive where OS is installed). If full size measurement is executed, data size of its result is about 1GB.
LAN Port	GigE 1 port
Display	1920*1080 or higher, 16.77 million colors (32bit) or higher
Other	DVD-ROM drive

*Microsoft and Windows are registered trademark of Microsoft Corp. in the US and other countries.
*Intel Core is a registered trademark or trademark of Intel Corporation in the US and other countries.
*All other company and product names listed in this sheet are trademarks or registered trademarks of their respective companies.



*Some screens are simulated.

*The specifications and external appearances of product in this catalogue may be changed without prior notice due to improvements.

*The catalogue includes products that are sold separately.

*The actual color of products may differ slightly from the catalogue due to lighting and printing conditions.

Contact information:

TOPCON TECHNOHOUSE CORPORATION

75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580 JAPAN

Phone: +81-3-3558-2666 Fax: +81-3-3558-4661

E-mail: techno-info@topcon.co.jp

SAFETY PRECAUTIONS



Make sure to carefully read the "Manual" to ensure that you use the product properly and safely.

• Always connect the instrument to the specified power supply voltage.

Improper connection may cause a fire or electric shock.

• Be sure to use the specified batteries.

Using improper batteries may cause a fire or electric shock.

For more information please visit our website.

<https://www.topcon-techno.co.jp/en/>

