TOPCON

New function

Ultimate Release!

2D Spectroradiometer

SR-5000/5000H

Spectroradiometer remarkable evolution.

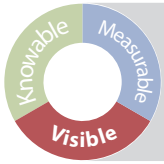
Realization high-accuracy and high-speed the convertible model making it have merit both of spectroscopic and colorimetry measurement.

Spectral mode	Hybrid type	XYZ(Filter) mode
High accurate measurement	SR-5000H	High speed measurement

Here is the ultimate solution that spectroscopic and colorimetry via 2D spectroradiometer.

SR-5000 / SR-5000H

Measuring 1.4 mega points of Spectral Radiance, Luminance, Chromaticity, Correlated Color Temperature.



Display measuring object Mura from to pseudo color and grayscale image.

Visualization the invisible phenomenon through the Spectral Radiance and Spectrum Matching Rate.

- Get to whole 2D spectral measurement data on 1376x1024 points and a change.
- Visualization that invisible phenomenon with human eyes.
- Visualize the changes that are not identified by luminance and chromaticity.
- Achieve to guarantee high accurate luminance and chromaticity to calibrated with traceability light source.
- 2D spectroradiometer capable of 2D measurement with performance equivalent to that of spot measurement.

Spectral mode

Enhancements

Point 1 — High accuracy measurement by spectrophotometry method of each 1 nm.

Measurement wavelength measure from 0.5nm with 0.1nm pitch.

Point 2 — Measure absolute value.

It can measure high accurate luminance and chromaticity by world first complete traceability and calibration.

Point 3 — Measurement of lower luminance from 0.5 cd/m².

Measure to 0.5 cd/m² and luminance, chromaticity and spectrum accurately.

Point 4 — Measurement of designated range.

Only designated area in FOV can measure,
and the measurement time will be faster when its area is small.

Point 5 — Auto gain.

Measurement with auto optimum gain setting makes possible to measure under various light environment from dark object to bright one.

New function

Point 6 — Spectral correction function.

Spectral correction and wavelength offset can be performed that is the standard spectroradiometer.

XYZ(Filter) mode

Only SR-5000H series

Point 1 — High accuracy measurement up to 0.005 cd/m² that is in ultra-low luminance range.

Measure luminance and chromaticity from 0.005 to 40,000 cd/m²* with high accuracy by using our own optical XYZ filter. * Standard illuminant A.

Point 2 — High speed measurement.

Measurement for luminance and chromaticity is possible in approx.4.5 sec when luminance of light source is 100 cd/m².

Point 3 — High accurate chromaticity.

The newly developed high accurate XYZ optical filter that chromaticity accuracy is within ±0.008, and achieved high correlation the sensitivity of human eyes.
*Standard illuminant A and standard colored glass filter.

Common function

Point 1 — 1.4 Mega pixel CCD sensor.

Measurement of 1376 × 1024 pixels is available.

Point 2 — Arbitrary shape of measuring area setting.

Measurement area setting such as polygon, rectangle, circle is available freely. It can flexibly correspond to various instrument panels, design displays, etc.

Point 3 — Synchronous measurement.

Measure stably by inputting the synchronization signal when measuring the blinking light source such as OLED.

Point 4 — Frequency measurement.

Measure stably by setting frequency when measuring the pulse emitting light source. *4 to 2,000 Hz

Point 5 — Multipoint extraction & measurement.

Specifying multipoint of emitting area, and extracting emitting points from each specified area based on threshold value, and measuring them automatically.

Point 6 — Layer function.

It is most suitable for light-shade measurement of the object that have wide dynamic range.

Point 7 — Diagonal correction function.

Correcting tilting image of the measuring surface. Once a tilting correction setting is specified in a recipe, measured images in subsequent measuring are corrected automatically.

Point 8 — Object color mode/ L*a*b*, Hue-Chroma.

Display the object color value by calculating standard white board and actual measurement data.

Enhancements

Point 9 — External control efficiency.

In addition to our standard SDK, Saving as the MATLAB format.

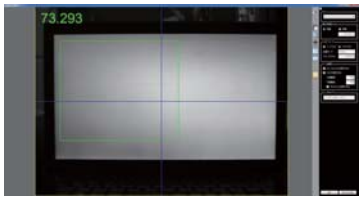
Support standard application software making it measure and evaluate efficiently easily operation. (Japanese/English)

You can control the SR-5000(H) series and retrieve measured data, save data, convert measured data into image via PC.
The application software conducts various types of data processing and data analyzing efficiently.

Two types mode are available for your usage.

•Measurement mode
Full functions are available including UA-5000(H) series control.

•Review mode
Viewer software for viewing image data and analyzing measured data, and can analyze measured data at other place without the instruments.



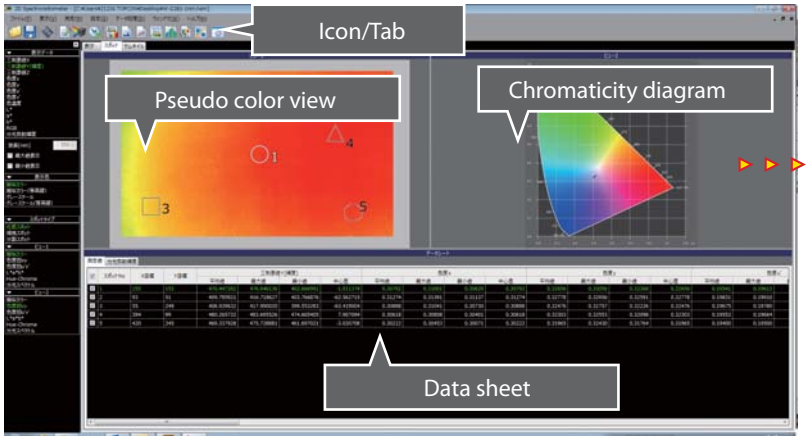
•Live view
Real time image that is automatically adjusted by brightness show on PC.
You can check measurement area of target and adjust the position via Live-view image.

•Focusing assist
This function is used to adjust focus at real time. The ratio of focusing is displayed, and you can adjust stable focusing.

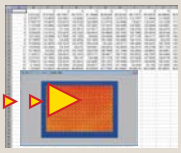
•Optimizing area
Measuring condition is optimized at specified area by specifying area even if there are some light in out of measurement area.

•Scale display
Pixel number of specified area and length equivalent to pixel number(mm) is shown.

•Zoom/Move
You can zoom and move the position anywhere in the live image.



Measured data can paste to spreadsheet software.

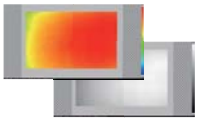


Measured data in each view can save as CSV, txt, or image file (BMP/JPG/PNG), and can paste to spreadsheet software such as Excel.

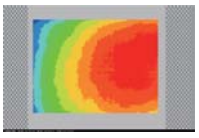
Selectable data item for display.

1. Tristimulus values (X, Y, Z)
2. Chromaticity x, y
3. Chromaticity u', v'
4. Colorimetric system L*a*b*
5. R,G,B
6. Spectral radiance

Main view window

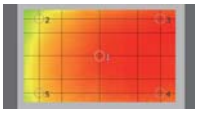


1. Pseudo color / Gray scale
Software-colored image and 16,384 steps gray scale present the difference in luminance / chromaticity on measuring area.
This view is suitable for uniformity measuring.



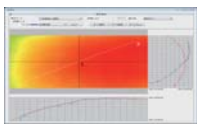
2. Contour view
This view use contour lines to indicate the profile of each tristimulus value.

3.Split spot view
The Image divided with grid pattern shows in this view, and average value in the each divided area is calculated.

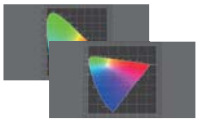


4. Standard spot view
Four type of Measuring standard available such as JEITA standard (EIAJ ED-2522/ ED-2710). You can customize the measuring spot size and the number of measuring spot.

5. Random spot view
Max 999 measuring spots can place on an image. Shape of measuring spots can select from Circle, Rectangle, Polygon (max 127 vertex).

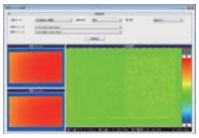


6. Cross section view Enhancements
Tristimulus value on the cross-section line is expressed as graph.
The cross-section line are selectable from cross line or diagonal line (max.10 lines). Line width expand.



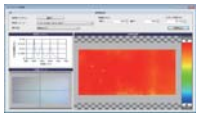
7. x, y /u', v' Chromaticity diagram view
Chromaticity value on the spot can plot on the x, y or u', v' diagram.
The plotted diagram can scale up.

8. Histogram View
The statistical graphics indicates the number of pixel in the vertical axis and the tristimulus value or chromaticity in the horizontal axis.

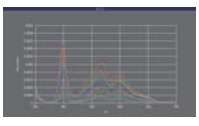


9. Measured images comparison
Differences of measured each images and differences by ratio calculation are displayed as images.
By entering mathematical expressions, you can freely define the comparison method.

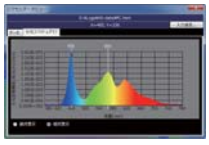
10. Spot comparison
Differences of measured each images and differences by ratio calculation are displayed as images.



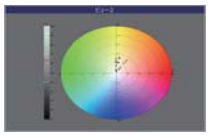
11. Spectral search
The matching ratio of each spectral is displayed.



12. Spectrum
Spectral radiance for each wavelength of the measurement spot is displayed.
The horizontal axis represents wavelength and the vertical axis represents spectral radiance.

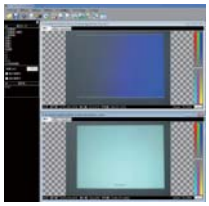


13. Pixel data
Spectrum on any pixels in measured image and various measured value are displayed.



14. L*a*b*
Chromaticity L*a*b* of each spot is plotted on the chromaticity diagram, and the color distribution can confirm. Also, chromaticity diagram is possible to zoom up for checking where plotted points concentrated.

15. Spectral radiance image
Measured data is displayed as an image for each wavelength.



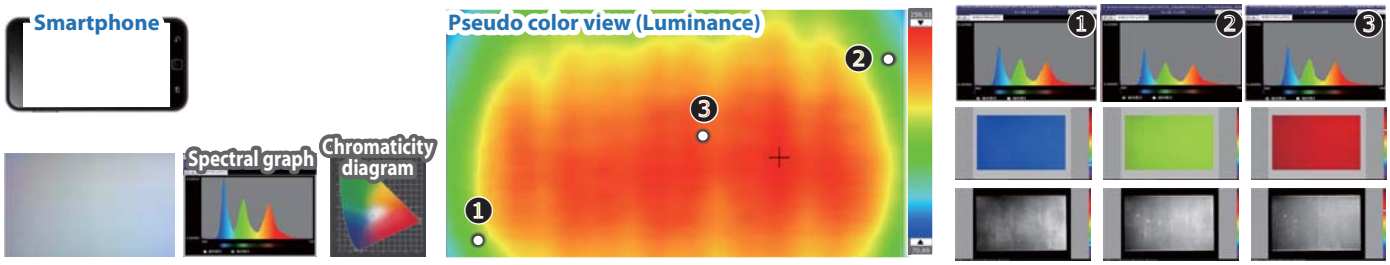
16. Backlight simulation
Analysis of liquid crystal cell itself excluding the influence of unevenness of backlight is available.

Principal use

- Evaluation of uniformity in luminance, chromaticity, spectrum that is for LCD, LCD related materials, OLED, QD, Laser and Micro LED etc.
- Evaluation of light distribution, spectrum that is for interior lighting, meter panel of automotive etc.
- Evaluation of uniformity in luminance, chromaticity and spectrum that is for light-emitting part of LED and OLED illumination.
- Evaluation of spectrum the indoor and all objects of outdoor scenery.
- Evaluation of spectroscopic spectra for textile fabrics.
- Detection of skin spot and pigmentation.
- Analysis of absorption, reflection, transmission characteristics.
- Measurement for Unevenness of film and glass coating, and interference fringe.
- Moire evaluation of touch panel.

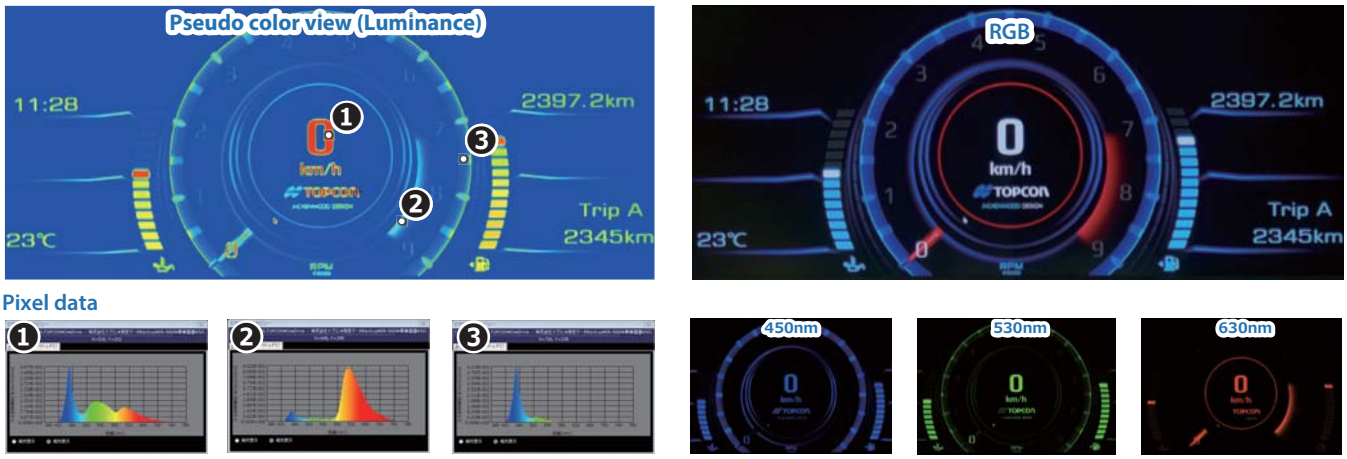
Usage examples

Evaluation of luminance, chromaticity and spectrum unevenness for OLED, LCD and related members etc.



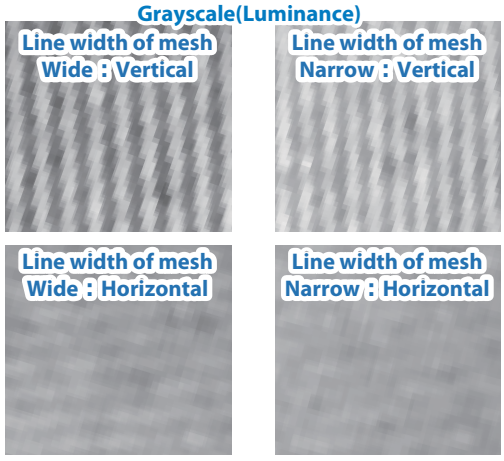
"Color shift" occurs due to low durability of OLED's RGB organic matter, and it is detected the failure by spectrum, luminance and chromaticity change amount.

Evaluation for automotive interior and exterior lamp.



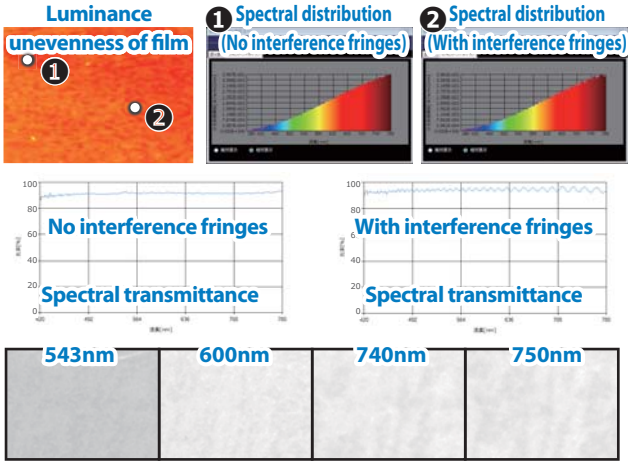
Evaluation for luminance unevenness, spectrum of specified points, luminance or chromaticity of object such as indicator.

Evaluation for moire of touch sensor



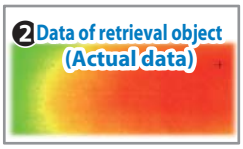
Analysis for matching of spectrum unevenness

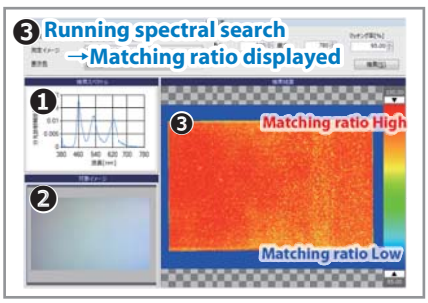
Evaluation of unevenness and interference fringe of film and glass coating



Evaluation of spectrum unevenness

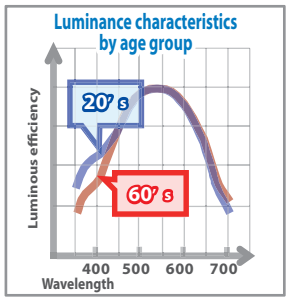
Spectral search

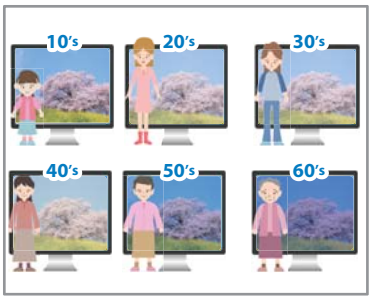




Matching analysis of spectrum unevenness

Visibility simulation by age group





Achievement of "Visibility simulation" according to spectral sensitivity by age group

SR-5000M＋Micro scope application example

Possible to evaluate high accurate spectrum distribution of very small area with contactless by a microscope and the instrument combination.

	SR-5000HM+Microscope (Objective lens)			For review	
	5×	10×	20×	50×	100×
Measurement area [mm]※	1.42×1.06	0.71×0.53	0.355×0.265	0.142×0.106	0.071×0.053
Resolution [μm/pixel]	1.29	0.64	0.32	0.13	0.06

・XYZ filter mode of SR-5000HM is not available when the microscope is attached.
・The objective lens 50x and 100x are only for review, it is out of specification.

●SR-5000HM+Optional accessories

●C-mount extension tube

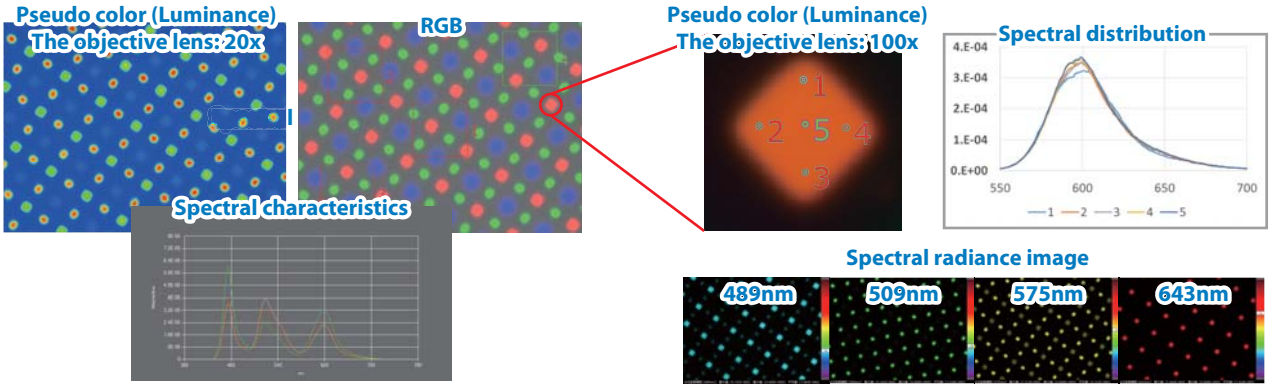
It is the adapter for connecting the microscope and C-mount port.

●ZV-57 / ZV-58 MS-CORRECT

Spectral transmission factor correction tool for microscope lens.

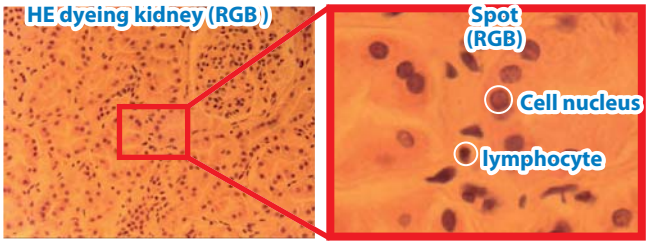
•Light source ： Halogen lamp
•Lamp life : Approx. 700 hours
•Operating conditions : Temperature 0 to 40℃, Humidity 20 to 80%R.H. (No condensation)
•Dimensions : Light unit ： 115x130x281 mm
Diffuser unit ： 109x29x62 mm
Light guide length ： 1 m
•Power supply ： ZV-57(AC 100 to 120V)
ZV-58(AC 200 to 220V

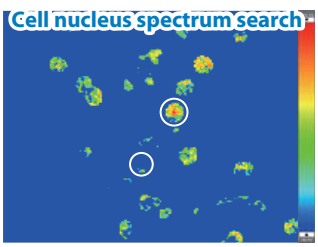
• Measuring sample of OLED

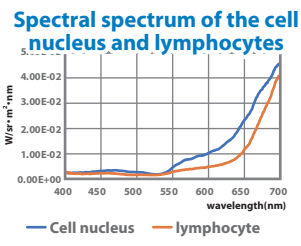


Confirm to spectral characteristic the alignment error of the metal mask from the difference in the film thickness or in the distribution of the film quality of the sub pixel.

• Measurement cases of pathological tissue (results measured with 20 × lens)







Analyzation and Quantification from to spectral mapping data with slight differences in the staining state of the biotissue.

Lineup

Standards lens

SR-5000S
SR-5000HS

Wide lens

SR-5000WS
SR-5000HWS

Telephoto lens

SR-5000T
SR-5000HT

Custom-made-product

Macro lens

SR-5000M
SR-5000HM

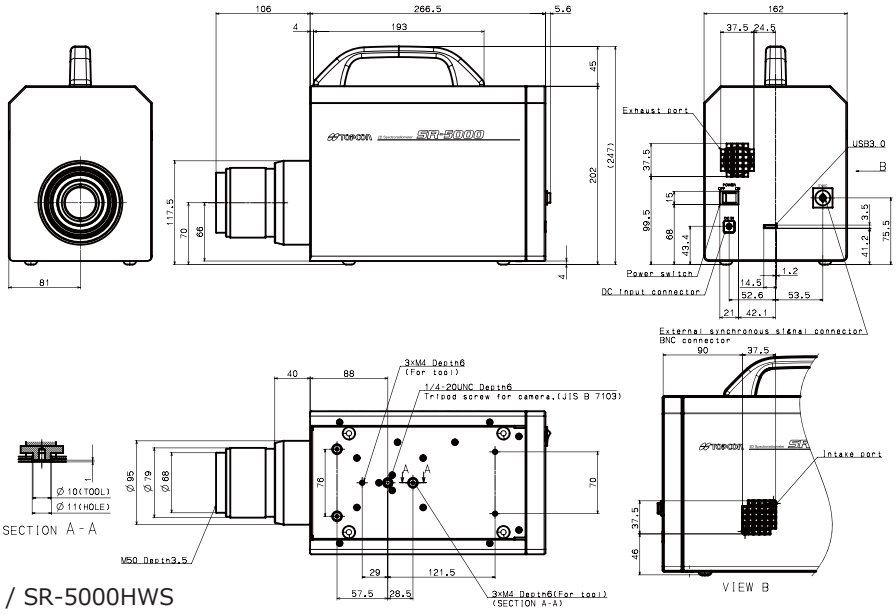
Custom-made-product

SDK (Software Development Kit)

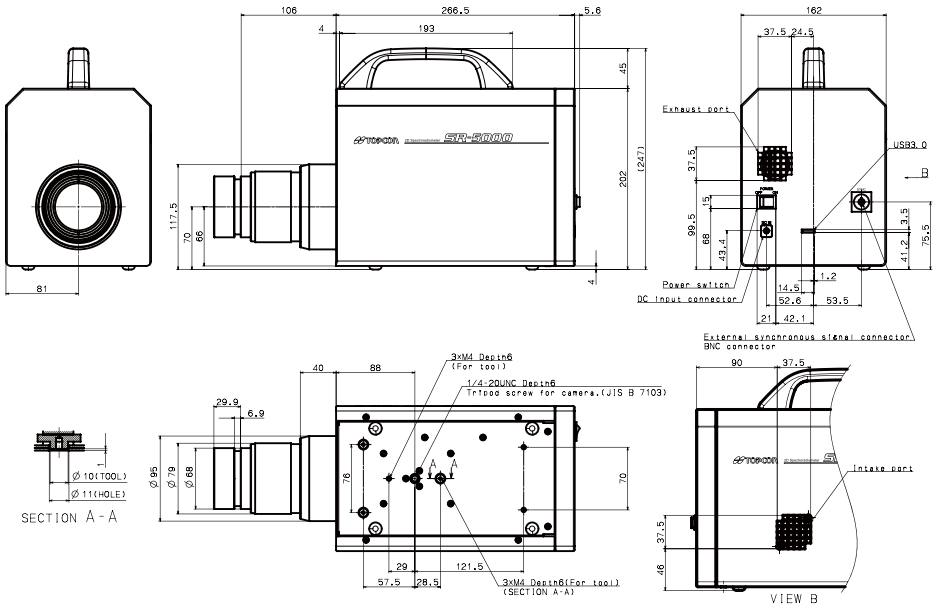
Development kit is composed of header file and library to control SR-5000 through a network PC.
It is possible to create customized software according to external communication and the needs of user.
It can acquire and display only the necessary data, and it is also possible to reduce the file size of measurement data.
Sample program is also included.

Dimension

SR-5000S / SR-5000HS



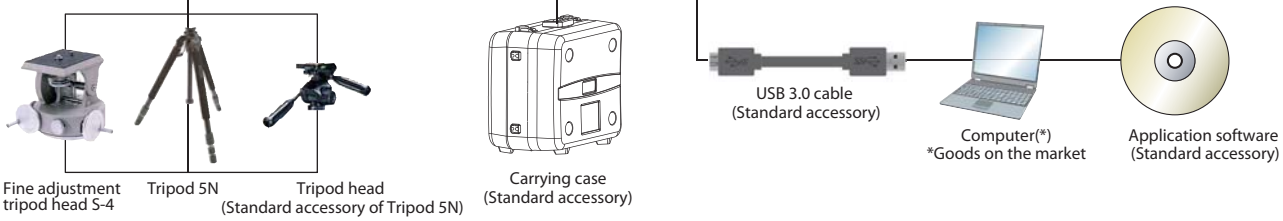
SR-5000WS / SR-5000HWS



System diagram

•Standard package

- •SR-5000 or SR-5000H main body..... 1 pcs
- •Attachment wide lens AL-5001..... 1 pcs
  * Only for SR-5000WS, SR-5000HWS
- •AC adapter ..... 1 pcs
- •USB 3.0 cable ..... 1 pcs
- •DVD-ROM(Application software/ Instruction manual/ SDK) ...1 pcs
- •Lens cap for objective lens ..... 1 pcs
- •Carrying case ..... 1 pcs



Optional accessories

• Tripod 5N

Easy collimation of measurement object.

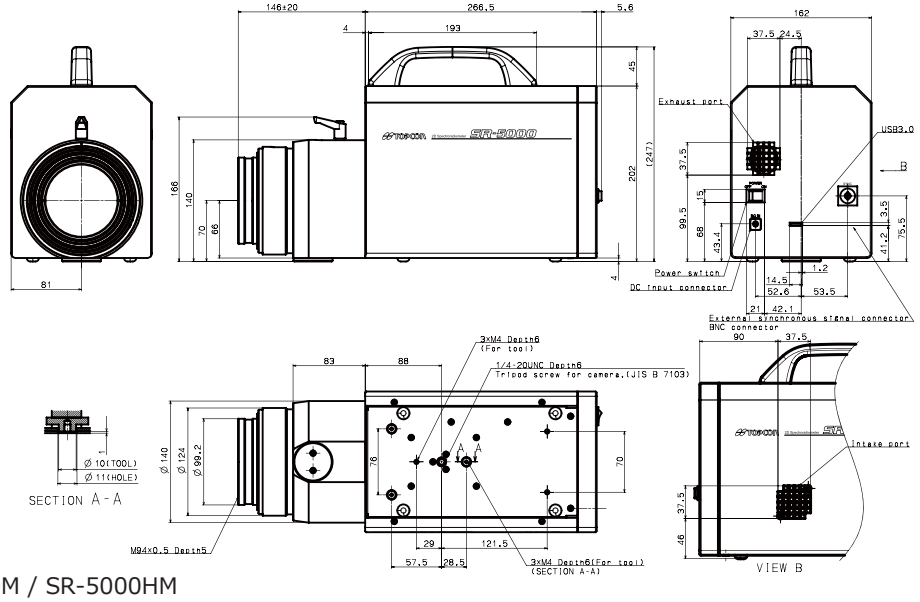
- •Max height: 1835 mm
- •Min height: 585 mm
- •Folder length: 810 mm
- •Leg section: 3 steps
- •Weight: Approx. 4.8kg including Tripod head

• Fine adjustment stand S-4

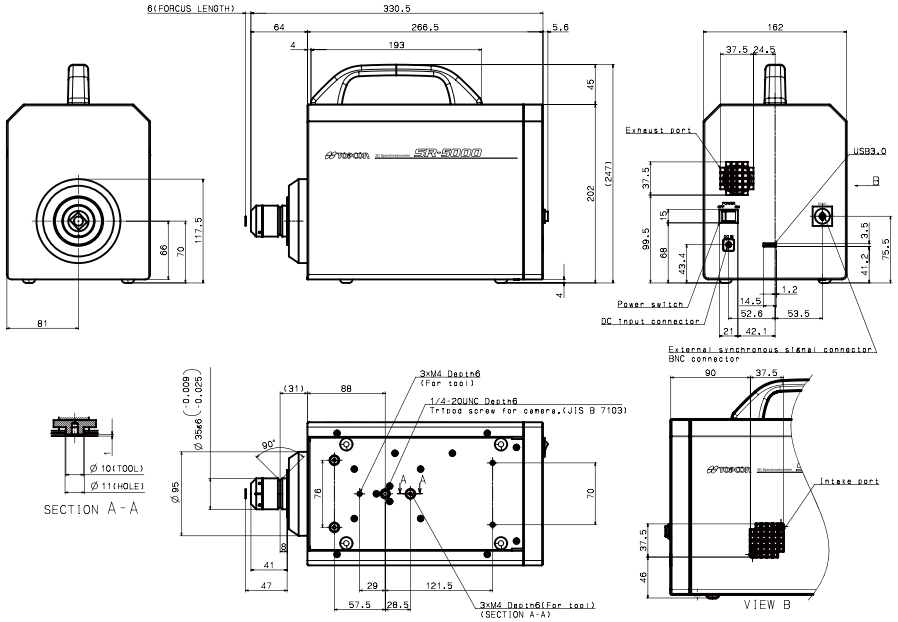
It is easy collimation each direction up / down / left / right by removing the tripod 5N head and installing this unit.

- •Elevation angle: 40°
- •Depression angle: 80°
- •Rotation: 360°
- •Weight: Approx. 1.7kg

SR-5000T / SR-5000HT



SR-5000M / SR-5000HM



Use only specified screws when using the tripod screw and screw holes for jig attachment. Do not tighten the screws any more than necessary. Doing so might cause internal breakage.

Unit : mm

Specifications

		SR-5000HS	SR-5000HWS	SR-5000HT	SR-5000HM	SR-5000HS	SR-5000HWS	SR-5000HT	SR-5000HM
		SR-5000S	SR-5000WS	SR-5000T	SR-5000M	SR-5000H Series Common			
Measurement mode *1		Spectral Mode				XYZ(Filter) Mode			
Detector		1.4 mega pixel CCD image sensor							
Objective lens		Standard lens	Wide lens *2	Telephoto lens	Macro lens				
		Focal length f=32mm	Focal length f=24mm	Focal length f=140mm	Focal length f=0.025mm				
Effective pixel		1376×1024							
Measurement range *3		0.5 to 5,000,000cd/m²				0.005 to 40,000cd/m²			
Wave length range		380 to 780nm				-			
Spectral accuracy		±0.5nm (On Hg emission line)				-			
Wave length resolution		1nm				-			
Linearity	Luminance	±2%				±3%			
	Chromaticity *3,*4	±0.002		±0.0035 (≦1cd/m²)		±0.005 (≦1cd/m²), ±0.003 (1cd/m²＜)			
	*3,*4			±0.002 (1cd/m²＜)					
In-plane uniformity *4,*7		±0.005				±0.008			
		Luminance: ±2% / Chromaticity: ±0.003				Luminance: ±2% / Chromaticity: ±0.003			
Repeatability	Luminance *8	0.5%				0.5% (≦1cd/m²), 0.3% (1cd/m²＜)			
	Chromaticity *3,*4,*5	0.002(0.5 to 1cd/m²), 0.001(1cd/m² or more)				0.0035 (≦0.05cd/m²), 0.002 (0.05cd/m²＜)			
Inteface *3,*4,*6		USB3.0 / External trigger							
Power supply		AC100 - 240V (50/60Hz) Dedicated AC adapter							
Power consumption		Approx. 20W							
Operation condition		Temperature: 0 to 40ºC, Humidity: 85%R.H. or less (No condensation)							
External dimension		W162×H247×D372.5mm	W162×H247×D402.4mm	W162×H247×D412.5mm	W162×H247×D330.5mm				
Weight		Approx.5.5kg	Approx.5.7kg	Approx.7.6kg	Approx.4.9kg				

*1: SR-5000S/WS/T/M: Spectral Mode only, SR-5000HS/HWS/HT/HM: Spectral Mode / XYZ(Filter) Mode
*2: Standard lens + Attachment lens, *3: Standard illuminant A, *4: At the center of CCD, *5: Within 2σ, *6: Max value - Min value
*7 :For reference of surface with the color glass, *8 : Standard illuminant A and 63 points included center of the CCD within 80% of field of view

Measurement area: Standard lens

Measurement distance (mm)	400	500	1,000	1,500	2,000	2,500
Display size (inch)	9.2	11.4	22.5	33.5	44.7	55.3
Horizonal (mm)	187.1	232.8	458.1	682.7	910.3	1127.0
Vertical (mm)	139.2	173.2	340.9	508.1	677.4	838.7

Measurement area: Wide lens

Measurement distance (mm)	400	500	1,000	1,500	2,000	2,500
Display size (inch)	12.7	15.6	30.3	44.9	59.6	74.1
Horizonal (mm)	259.1	318.4	617.4	914.1	1213.7	1510.7
Vertical (mm)	192.8	236.9	459.5	680.3	903.2	1124.2

Measurement area: Telephoto lens

Measurement distance (mm)	600	1,000	1,500	2,000	2,500
Display size (inch)	3.1	5.6	8.7	11.8	14.9
Horizonal (mm)	63.6	114.2	177.5	240.7	303.4
Vertical (mm)	47.3	84.9	132.1	179.1	225.8

Measurement area: Macro lens

Measurement distance (mm)	6
Display size (inch)	0.3
Horizonal (mm)	7.1
Vertical (mm)	5.3

*Above values are design specifications. Above values may be difference from the values in practice.
*The measurement distance is from tip of objective lens to the measurement target.
*Abobe values are 80 % area of FOV.

Hardware requirement

OS	Windows® 7 Ultimate (64bit) SP1 Windows® 7 Professional (64bit) SP1 *XP mode is not available. Windows® 10 Pro (64bit)	
CPU	Intel® Core(TM) i7-4770 or higher	
Memory	8GB 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 2.5GB.	
USB port	USB3.0 : 1 port *Please use USB port on the mother board (In case of laptop PC, use USB port on the main body). *Otherwise It may cause malfunction.	
USB Host Controller	Intel® USB 3.0 eXtensible Host Controller	
USB driver	Windows® 7	Intel® USB 3.0 eXtensible Host Controller Driver 4.0.6.60 or later *Installer of this driver can be downloaded from website of Intel.
	Windows® 10	Microsoft Windows® 10 USB 3.0 driver *Windows® 10 has a native in-box USB 3.0 driver.
Display	1024*768 or higher, 16.77 million colors (32bit) or higher	
Drive	DVD-ROM drive	

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*This specification is based on the test environment of Topcon Technohouse. Incompatibility problem with individual PC is out of warranty.

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JCSS JCSS 0073

JCSS is the logo of the traceability system based on the Japanese Measurement Law. TOPCON TECHNOHOUSE is a certified provider optical solutions. The company's certification number is 0073. (JCSS: JAPAN Calibration Service System)

TOPCON TECHNOHOUSE has been certified as a provider of optical solutions, according to the Japanese Measurement Law.

We will issue a calibration certificate bearing the JCSS logo, which guarantees the accuracy of illuminance (illuminance meter), and luminosity (lamp) based on national standards.

*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.

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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.

http://www.topcon-techno.co.jp/en/

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