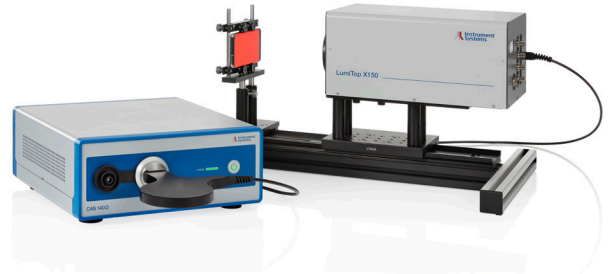


# LumiTop X150

## Spectrally enhanced imaging colorimeter

### Key features at a glance

- ▲ Ultra-high resolution camera with 151 MP to provide single pixel evaluation for state-of-the art DUTs
- ▲ Proven concept of LumiTop – spectrally enhanced imaging colorimeter
- ▲ Combination of 2D-RGB sensor with spectroradiometer and flicker sensor



### \\ TECHNICAL SPECIFICATIONS

LumiTop X150				
Measurement quantities				
2D	Luminance, color			
Spot	Spectrum, luminance, color, flicker			
General specifications				
Operating system	Windows 7/10 (64 bit)			
Dimensions (l x w x h) <sup>1)</sup>	365 mm x 230 mm x 160 mm			
Weight <sup>2)</sup>	10.4 kg			
Power supply	24 V			
Operating temperature range	15 – 35 °C			
Camera specifications				
Effective resolution (h x v)	14,192 x 10,640 (151 megapixels, CMOS)			
Pixel size	3.76 µm x 3.76 µm			
Dynamic range	80.8 dB			
AD converter	14 bit			
Size sensor	2.6" (66.8 mm diagonal)			
Interface camera	Gigabit Ethernet, M12 12-Pin Female, Quad CoaXPress (4 x 6.25 Gbit/s)			
Measurement range 2D <sup>3) 4)</sup>	L = 0.003 cd/m <sup>2</sup> – 50,000 cd/m <sup>2</sup>			
Accuracy and precision	Luminance	Color		
Accuracy of camera (rel. to CAS) <sup>5)</sup>	±0.2 %	±0.001		
Instrumental precision camera <sup>6)</sup>	±0.04 %	±0.0002		
Camera uniformity (RNU) <sup>7)</sup>	±0.015 %	±0.0006		
Measurement time <sup>8)</sup>	Single image	Region of interest	2x2 image	Region of interest
Measurement time hybrid mode	3.5 s	1.9 s	8.3 s	5.5 s
Measurement time camera only	3.2 s	1.1 s	7.5 s	4.7 s

## \\ TECHNICAL SPECIFICATIONS

CAS specifications	CAS 140D	
Interface CAS	USB, PCIe, Gigabit Ethernet	
Measurement range CAS <sup>3) 9)</sup>	L = 0.0004 cd/m <sup>2</sup> – 5 x 10 <sup>6</sup> cd/m <sup>2</sup> (250 μm slit size)	
	L = 0.0013 cd/m <sup>2</sup> – 1.2 x 10 <sup>7</sup> cd/m <sup>2</sup> (100 μm slit size)	
Accuracy and precision	Luminance	Color
Accuracy of CAS	±3.0 % <sup>10)</sup>	±0.0015 <sup>11)</sup>
Instrumental precision CAS <sup>6)</sup>	±0.1 %	±0.0002
Polarization sensitivity <sup>12)</sup>	±2.0 %	±0.002

Available lenses					
Number	Focal length	FOV size	FOV diagonal	CAS spot diagonal	Working distance <sup>13)</sup>
1	104 mm f/4	max. 193 mm x 145 mm	9.5"	11.6 mm	~ 400 mm
		min. 137 mm x 103 mm	6.7"	8.2 mm	~ 300 mm
2	92 mm f/3.3	max. 331 mm x 248 mm	16.3"	19.9 mm	~ 560 mm
		min. 226 mm x 170 mm	11.1"	13.6 mm	~ 380 mm

Instrument Systems is continually working on the further development of its products. Technical changes, errors and misprints do not justify claims for damages. For all other purposes, our Terms and Conditions of Business shall be applicable.

<sup>1)</sup> Not including external fiber and mode mixer.

<sup>2)</sup> Without CAS, with mode mixer.

<sup>3)</sup> Contact us for extended measurement range options.

<sup>4)</sup> Lower measurement limit based on a signal to noise ratio of 10:1 for maximum exposure time (60 s). Upper measurement limit based on a defocused measurement with signal level < 80 % of a white (non-modulated) LED light source at minimum exposure time (80 μs).

<sup>5)</sup> Typical value for maximum deviation over the FOV relative to the CAS spot; calculated for an image with 72 pixels cropped at each edge and 12 by 12 pixels binning (34 averages) immediately after calibration with reference used for flat-field correction.

<sup>6)</sup> 2σ of repeated measurements of one instrument (L ≈ 100 cd/m<sup>2</sup>, autoexposure, 3h warm up time).

<sup>7)</sup> RNU (response non-uniformity) is defined as 99.7 % percentile of the deviation of the mean image value; calculated for an image with 72 pixels cropped at each edge and 12 by 12 pixels binning (34 averages) immediately after calibration with reference used for flat-field correction.

<sup>8)</sup> Time between beginning of two subsequent measurements using the SDK; determined with a camera exposure time of 20 ms and CAS exposure time of 200 ms for a white LED (L ≈ 500 cd/m<sup>2</sup>). Depends mainly on PC processing capability.

Single image refers to a one shot 151 MP demosaiced RGB image. 2x2 image refers to a 2x2 pixel shifted image with 151 MP resolution per color channel and is only available with optional pixel shifter hardware.

ROI-Region of Interest refers to an image size filling only 50% of the camera sensor in each dimension.

<sup>9)</sup> Lower measurement limit based on a signal to noise ratio of 10:1 for maximum exposure times 65 s for CAS 140D. Upper measurement limit based on a signal level < 80 % for a white (non-modulated) LED light source using a CAS internal optical density filter OD4 and minimum exposure time 4 ms (CAS 140D).

<sup>10)</sup> Immediately after calibration relative to calibration standard.

<sup>11)</sup> Immediately after calibration.

<sup>12)</sup> Maximum deviation from average of repeated CAS measurements with a linear polarized light source and varying polarization angle.

<sup>13)</sup> Distance between DUT and front plate of LumiTop.