

ProMetric® I

Imaging Colorimeter



Purpose-built for manufacturing test of displays, illuminated keyboards, and surfaces.

ProMetric I Highlights

- Optimized for speed, resolution, and measurement accuracy
- Delivers color and light measurements that are precisely correlated with human visual perception
- Tristimulus color filters with innately close match to CIE color-matching functions
- Multiple lens choices with Smart Calibration™ for a wide range of focus and aperture settings
- Flexible system, capable of addressing multiple applications for lit and non-lit components
- Seamless integration with TrueTest™ Automated Visual Inspection Software and specialized software packages

The world's fastest and most accurate high-resolution imaging colorimeter

ProMetric I is designed to address the demands for high-volume manufacturing of displays, backlit components, light sources, and electronic devices. Whether expanding test coverage or increasing throughput, ProMetric I delivers the required performance for highly accurate color and luminance measurements in an automated manufacturing environment. ProMetric I is designed around scientific-grade image sensors in a range of high-resolution options. These sensors enable pixel-level measurements of displays (LCD, OLED), inter- and intra-character luminance measurements on backlit keyboards and panels, and accurate measurements of LED luminance and color in luminaires with large LED arrays.

ProMetric I incorporates **Smart Technology™** innovations, which simplify setup and ensure accurate measurement results.

- **Smart Control™** for fast, precise setup: Smart Control allows users to electronically adjust both focus and aperture settings of the lens from software.
- **Smart Touch™** for ease of use: Smart Touch provides a touchscreen display interface that supports measurement setup, data acquisition, and measurement review on the imaging colorimeter.
- **Smart Calibration™** for accuracy: Smart Calibration monitors lens focal distance and aperture settings and automatically applies the correct flat-field calibration.

A production line is a harsh environment and reliable communications can be a challenge. ProMetric I supports USB and/or Ethernet communications, providing highly reliable operation over long distances, even in the most demanding manufacturing environments.

ProMetric I comes standard with ProMetric Software to operate the colorimeter in a manual mode or to support programming via an API. ProMetric I is optimized for automation via optional TrueTest™ Automated Visual Inspection Software and a range of application-specific software modules. TrueTest Software provides a complete, turnkey solution for production-level test sequencing using a library of light measurement and inspection software tools. From absolute accuracy in product design to optimal efficiency in light and color quality control on the line, ProMetric I is designed specifically for your application.

Specifications

Parameter	ProMetric I2	ProMetric I8	ProMetric I29	ProMetric I61
Primary Application	Uniformity Testing, R&D	Production, Display Testing, Pixel-level Measurement, Color Correction		
Sensor Pixel Resolution	1600 x 1200	3296 x 2472	6576 x 4384	9568 x 6380
Sensor Megapixels	1.9	8.1	28.8	61.0
Sensor Type	CCD			CMOS
System Dynamic Range (single exposure, per pixel)	59 dB (1 x 1 binning)			76 dB (1 x 1 binning)
Luminance (Minimum)*	0.00001 cd/m ² Limit of Detection 0.0001 cd/m ² @ SNR = 60 0.0005 cd/m ² @ SNR = 100			0.0005 cd/m ² Limit of Detection 0.0010 cd/m ² @ SNR = 60 0.0015 cd/m ² @ SNR = 100
Luminance (Maximum)	10 ¹⁰ cd/m ² with optional ND filters			
System Accuracy**	Illuminance ± 3%; Luminance (Y) ± 3%; Color Coordinates (x,y) ± 0.003			
Short-term Repeatability*	Illuminance ± 0.02%; Luminance (Y) ± 0.02%; Color Coordinates (x,y) ± 0.00005			
Lens Type	Electronically controlled focus and aperture			
Focal Distances Available	24, 35, 50, 100, 200 mm		50, 100, 200 mm	
Field of View (Full Angle, H x V degrees)	24 mm 20° x 15° 35 mm 14° x 10° 50 mm 10° x 8° 100 mm macro 5° x 4° 200 mm 3° x 2°	24 mm 38° x 30° 35 mm 29° x 22° 50 mm 21° x 16° 100 mm macro 10° x 8° 200 mm 5° x 4°	50 mm 40° x 28° 100 mm macro 20° x 14° 200 mm 11° x 7°	
Minimum Measurement Time***	0.3 sec - photopic 1.1 sec - color	0.4 sec - photopic 1.2 sec - color	0.9 sec - photopic 2.4 sec - color	0.6 sec - photopic 1.8 sec - color
Spatial Measurement Capabilities	Luminance, Radiance, Illuminance, Irradiance, Luminous Intensity, Radiant Intensity, CIE Chromaticity Coordinates, L*a*b* Color Scale, Correlated Color Temperature (CCT), Dominant Wavelength			
Units	foot-lambert, cd/m ² , nit, W/sr/m ² , foot-candles, lux, lux-s, W/m ² , W-s/m ² , candela, W/sr. CIE (x, y) and (u', v'), Kelvin (CCT)			
Communication Interface	Ethernet 100/1000, USB 2.0			10 Gigabit Ethernet (10 GigE)
Power	100-240 V, 50-60 Hz, 140 Watts			
LCD Touch Panel	Resolution: 800 x 600; Diagonal: 125 mm			
Dimensions (H x W x D)	238 mm x 181 mm x 230 mm			
Weight	4.9 kg			4.6 kg
Operating Temperature	0 - 30° C			5 - 35° C
Operating Humidity	20 - 70% non-condensing			

Specifications subject to change without notice.

- * Based on a virtual detector size of 100 x 100 pixels.
- ** Based on illuminant A or user calibration for specific spectra. Based on a virtual detector size of 100 x 100 pixels and a minimum exposure time of 10ms.
- *** For 100 cd/m², using Ethernet.

ProMetric I-series imaging colorimeters, and the electronically-controlled lenses supplied with them, are factory-calibrated over all possible distances and two specific aperture settings. Because the lenses are electronically controllable for focus (working distance) and aperture, the colorimeter will automatically apply the appropriate flat-field correction.

Lens	Calibrated Apertures
Canon EF 24 mm f/2.8 USM	f/4.7 f/8
Canon EF 35 mm f/2.0 USM	f/2.3 or f/4.0† f/8
Canon EF 50 mm R f/2.0 USM	f/2.8 f/8
Canon EF 100 mm f/2.8L Macro IS USM	f/3.3 f/8
Canon EF 200 mm f/2.8 USM	f/3.3 f/8

† f/4.0 for 29MP and 61MP systems



System Specifications

- Intel® Core™ i7-8086 CPU @ 4.00 GHz
- 32 GB installed RAM

System Requirements

- Windows® 10, 64 bit
- Ethernet 100/1000 or USB 2.0 port (I2, I8, and I29)
- Desktop: PCI-E x8 lane slot (I61)
- Laptop: Thunderbolt 3 Port (I61)