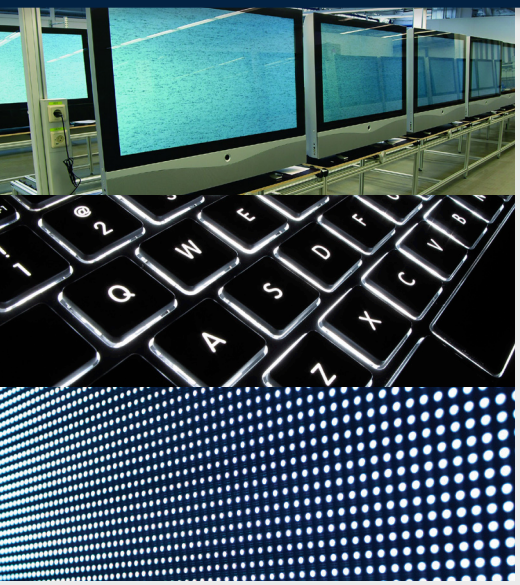
RADIANT
VISION SYSTEMS

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 (e.g., LCD, OLED, microLED), 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 provides the performance you need for demanding visual inspection applications.

Radiant Vision Systems
18640 NE 67th Ct.
Redmond, WA 98052 USA

T: +1 425 844-0152
F: +1 425 844-0153

General Inquiries: Info@RadiantVS.com
Technical Support: Support@RadiantVS.com
Website: www.RadiantVisionSystems.com

I-Series Imaging Colorimeter - Specifications

Parameter	ProMetric I2	ProMetric I8	ProMetric I16-G	ProMetric I29	ProMetric I45	ProMetric I61
Primary Applications	Uniformity Testing, R&D, Production Line Testing, Display Testing, Pixel-level Measurement, Color Correction, Advanced Vision					
Sensor Pixels	1600 x 1200	3296 x 2472	5312 x 3032	6576 x 4384	**8192 X 5460**	9568 x 6380
Sensor Megapixels	1.9	8.1	16.1	28.8	44.7	61.0
Sensor Type	CCD	CCD	CMOS	CCD	CMOS	CMOS
System Dynamic Range (single exposure, per pixel)	59 dB (1 x 1 binning)	59 dB (1 x 1 binning)	70 dB (1 x 1 binning)	59 dB (1 x 1 binning)	66 dB (1 x 1 binning)	76 dB (1 x 1 binning)
Luminance (Minimum)*						
Limit of Detection	0.00001 cd/m²	0.00001 cd/m²	0.0005 cd/m²	0.00001 cd/m²	0.0001 cd/m²	0.0005 cd/m²
@ SNR = 60	0.0001 cd/m²	0.0001 cd/m²	0.002 cd/m²	0.0001 cd/m²	0.0002 cd/m²	0.0010 cd/m²
@ SNR = 100	0.0005 cd/m²	0.0005 cd/m²	0.003 cd/m²	0.0005 cd/m²	0.0005 cd/m²	0.0015 cd/m²
Luminance (Maximum)	10^{10} cd/m² with optional ND filters					
System Accuracy**	Illuminance ± 3%; Luminance (Y) ± 3%; Color Coordinates (x,y) ± 0.003					
Short-term Repeatability*						
Illuminance	± 0.02%	± 0.02%	± 0.03%	± 0.02%	± 0.04%	± 0.02%
Luminance (Y)	± 0.02%	± 0.02%	± 0.03%	± 0.02%	± 0.04%	± 0.02%
Color Coordinates (x,y)	± 0.00005	± 0.00005	± 0.00005	± 0.00005	± 0.00005	± 0.00005
Lens Type	Electronically controlled focus and aperture					
Focal Distances Available 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°	24 mm 33° x 19° 35 mm 24° x 14° 50 mm 17° x 10° 100 mm macro 8° x 5°	50 mm 40° x 28° 100 mm macro 20° x 14° 200 mm 11° x 7°	35 mm 40° x 27° 50 mm 29° x 19° 100 mm macro 15° x 10°	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	0.5 sec - photopic 1.4 sec - color	0.9 sec - photopic 2.4 sec - color	0.7 sec - photopic 1.5 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/m², nit, W/sr/m², foot-candles, lux, lux-s, W/m², W-s/m², candela, W/sr. CIE (x, y) and (u', v'), Kelvin (CCT)					
Communication Interface	Ethernet 100/1000 USB 2.0	Ethernet 100/1000 USB 2.0	Ethernet 1000	Ethernet 100/1000 USB 2.0	10 Gigabit Ethernet (10 GigE)	10 Gigabit Ethernet (10 GigE)
Power	100-240 V, 50-60 Hz 140 Watts	100-240 V, 50-60 Hz 140 Watts	100-240 V, 50-60 Hz 60 Watts	100-240 V, 50-60 Hz 140 Watts	100-240 V, 50-60 Hz 140 Watts	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	4.9 kg	4.6 kg	4.9 kg	4.9 kg	4.6 kg
Operating Temperature	0 - 30° C	0 - 30° C	5 - 35° C	0 - 30° C	15 - 35° C	5 - 35° C
Operating Humidity	20 - 70% non-condensing					

* *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.

Electronically Controlled Lenses	Calibrated Apertures
24 mm	f/4.7; f/8
35 mm	f/2.3 or f/4.0†; f/8
50 mm R	f/2.8; f/8
100 mm	f/3.3; f/8
200 mm	f/3.3; f/8

† f/4.0 for 29MP and 61MP systems

Specifications subject to change without notice.

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)
- Ethernet 1000 port (I16-G)
- Desktop: PCI-E x8 lane slot (I45, I61)
- Laptop: Thunderbolt 3 Port (I45, I61)

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