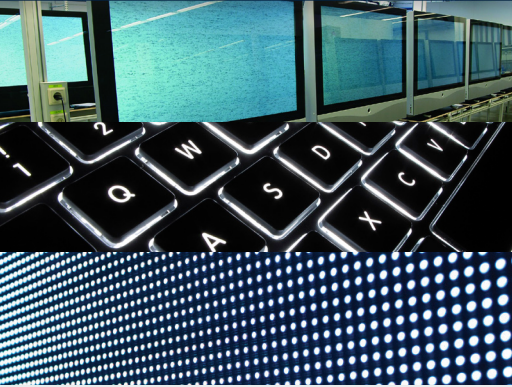


## ProMetric® Y

Imaging Photometer



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

### ProMetric Y Highlights

- Display Test:**  
 Inspect for particle and line defects, uniformity, light leakage, mura, demura (pixel correction), luminance, surface defects (bubbles, scratches, debris).
- Cosmetic Defects:**  
 Detect scratches, dings, dents, missing / disoriented elements, confirm text, evaluate overall surface uniformity.
- Keypad Inspection:**  
 Evaluate brightness, inter- and intra-character uniformity, light leakage, missing character, wrong character.

### Key Features

- Optimized for speed, resolution, and measurement accuracy
- Available in photometric and radiometric models
- Multiple lens choices for a wide range of focus and aperture settings
- Seamless integration with TrueTest™ and other specialized software

### Fast, small-format imaging photometer optimized for display and cosmetic inspection in production

The ProMetric® Y family of rugged, small-form-factor imaging photometers is optimized to test displays, keyboards, assemblies, and cosmetic surfaces in high-volume production settings. The sophisticated measurement performance of this photometer combined with configurable analysis software and local engineering expertise delivers a complete production test solution. Faster measurements enable shorter cycle times. Objective quantification replaces subjective human inspection to reduce operating costs. Reliable test analyses improve yield. Deploying a ProMetric Y system increases output, improves quality, and controls cost to deliver a quick return on your production test investment.

Each ProMetric Y Imaging Photometer employs a scientific-grade image sensor that provides accurate, repeatable measurements. ProMetric cameras optimize resolution and dynamic range to ensure imaging performance. ProMetric Y supports high-speed USB and/or Ethernet communications.

ProMetric Y incorporates industry-first **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.
- Smart Calibration™** for automatic high-accuracy results: ProMetric Y offers a variety of electronically controlled lenses, each calibrated over a wide range of working distances and aperture settings. ProMetric Y monitors focal distance and aperture settings and automatically applies the correct flat-field calibration.

ProMetric Y comes standard with ProMetric Software to operate the photometer in a manual mode or to support programming via an API. ProMetric Y 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 high-volume manufacturing of display devices (televisions, phones, tablets, notebooks), backlit symbols (keyboards, instrument panels), virtual projections (augmented reality and head-up displays), and lighting products.

# Specifications

Parameter	ProMetric Y2	ProMetric Y16	ProMetric Y29	ProMetric Y43	ProMetric Y45	ProMetric Y61
Primary Application	Production, Lighting	Production, Display Testing, Pixel-level Measurement, Advanced Vision				
Sensor Pixel Resolution	1600 x 1200	4896 x 3264	6576 x 4384	8040 x 5360	8192 x 5460	9568 x 6380
Sensor Megapixels	1.9	16.0	28.8	43.1	44.7	61.0
Sensor Type	CCD			CMOS		
System Dynamic Range (single exposure, per pixel)	61 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)*	0.0001 cd/m <sup>2</sup> Limit of Detection 0.0001 cd/m <sup>2</sup> @ SNR = 60 0.0005 cd/m <sup>2</sup> @ SNR = 100			0.0001 cd/m <sup>2</sup> Limit of Detection 0.0002 cd/m <sup>2</sup> @ SNR = 60 0.0005 cd/m <sup>2</sup> @ SNR = 100		0.0005 cd/m <sup>2</sup> Limit of Detection † 0.0010 cd/m <sup>2</sup> @ SNR = 60 † 0.0015 cd/m <sup>2</sup> @ SNR = 100 †
Luminance (Maximum)	10 <sup>10</sup> cd/m <sup>2</sup> with optional ND filters					
System Accuracy**	Illuminance ± 3%; Luminance (Y) ± 3%					Illuminance ± 3%; † Luminance (Y) ± 3% †
Short-term Repeatability*	Illuminance ± 0.02%; Luminance (Y) ± 0.02%			Illuminance ± 0.03%; Luminance (Y) ± 0.03%		Illuminance ± 0.02%; † Luminance (Y) ± 0.02% †
Lens Type	Electronically controlled focus and aperture					
Focal Distances Available	24, 35, 50, 100, 200 mm	35, 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°	35 mm 41° x 28° 50 mm 30° x 20° 100 mm macro 15° x 10° 200 mm 8° x 5°	35 mm 55° x 37° 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° 200 mm 8° x 5°	35 mm 55° x 37° 50 mm 40° x 28° 100 mm macro 20° x 14° 200 mm 11° x 7°	
Minimum Measurement Time***	0.2 sec	0.6 sec	1.0 sec	1.4 sec	0.5 sec	0.5 sec †
Spatial Measurement Capabilities	Luminance, Radiance, Illuminance, Irradiance, Luminous Intensity, Radiant Intensity					
Units	foot-lambert, cd/m <sup>2</sup> , nit, W/sr/m <sup>2</sup> , foot-candles, lux, lux-s, W/m <sup>2</sup> , W-s/m <sup>2</sup> , candela, W/sr					
Communication Interface	Ethernet 100/1000, USB 2.0			10 Gigabit Ethernet (10 GigE)		
Power	External AC / DC adapter, 100-240 V, 50-60 Hz, 60 Watts					
Dimensions (H x W x D)	86 mm x 86 mm x 154 mm					86 mm x 86 mm x 170 mm
Weight	1.4 kg					1.2 kg †
Operating Temperature	0 - 30° C			15 - 35° C		5 - 35° C †
Operating Humidity	20 - 70% non-condensing					

Specifications subject to change without notice.

\* Based on a virtual detector size of 1% H x 1% V of the FOV, and a minimum exposure time of 10ms.

\*\* Based on illuminant A or user calibration for specific spectra. Based on a virtual detector size of 1% H x 1% V of the FOV, and a minimum exposure time of 10ms.

\*\*\* For 100 cd/m<sup>2</sup>, using Ethernet.

† Preliminary specification. Contact Radiant to discuss your application.

ProMetric Y-series imaging photometers, 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 photometer 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 f/8
Canon EF 50 mm R f/2.0 USM	f/2.3 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



## System Specifications

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

## System Requirements

- Windows® 10, 64 bit
- Ethernet 100/1000 or USB 2.0 port (Y2, Y16, Y29, and Y43)
- Desktop: PCI-E x8 lane slot (Y45, Y61)
- Laptop: Thunderbolt 3 Port (Y45, Y61)