

## 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.

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 takt 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.

The ProMetric Y2 uses a scientific-grade CCD sensor that is thermo-electrically cooled to provide accurate, repeatable 61 dB dynamic range measurements. High resolution is available in the ProMetric Y16 with 16-megapixel (4896 x 3264) CCD sensor, ProMetric Y29 with 29-megapixel (6576 x 4384) CCD sensor, and ProMetric Y43 with 43-megapixel (8040 x 5360) CCD sensor. Each ProMetric Y supports high-speed USB and 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, cell phones, tablets, notebooks), backlit symbols (keyboards, instrument panels), virtual projections (augmented reality and head-up displays), and lighting products.

## Key Features

- High-speed, high-resolution, cooled interline CCDs
- PM-IP Imaging Photometer with internal Tristimulus Y filter for accurate photometric measurements
- PM-IR Imaging Radiometer for IR measurements
- Multiple lens choices with Smart Calibration for a wide range of focus and aperture settings
- Seamless integration with TrueTest™ Automated Visual Inspection software and other specialized software modules
- Multi-exposure High Dynamic Range (HDR) mode

## Specifications

Parameter	ProMetric Y2	ProMetric Y16	ProMetric Y29	ProMetric Y43
Primary Application	Production Line Testing, Lighting	Production Line Testing, Display Testing, OLED Testing, Advanced Vision		
Sensor Pixels	1600 x 1200	4896 x 3264	6576 x 4384	8040 x 5360
Sensor Megapixels	1.9	16.0	28.8	43.1
Sensor Type	CCD, Interline, Cooled to +5°C			
System Dynamic Range (single exposure, per pixel)	61 dB (1 x 1 binning)			59 dB (1 x 1 binning)
High Dynamic Range (multi-exposure)	> 1,000,000:1			
Luminance (Minimum)*	0.00001 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			
Luminance (Maximum)	10 <sup>10</sup> cd/m <sup>2</sup> with optional ND filters <sup>1</sup>			
System Accuracy**	Illuminance ± 3%; Luminance (Y) ± 3%			
Short-term Repeatability*	Illuminance ± 0.02%; Luminance (Y) ± 0.02%			
Lens Type/Focal Distances Available	Electronically controlled focus and aperture; 24, 35, 50, 100, 200 mm	Electronically controlled focus and aperture; 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°	
Minimum Measurement Time***	0.2 sec	0.6 sec	1.0 sec	1.4 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			
Power	External AC/DC adapter, 100-240 V, 50-60 Hz, 60 Watts			
LCD Touch Panel	None			
Dimensions (H x W x D)	86 mm x 86 mm x 154 mm			
Weight	1.4 kg			
Operating Temperature	0 - 30° C			
Operating Humidity	20 - 70% non-condensing			

Specifications subject to change without notice.

<sup>1</sup> With 35 mm USM lens, use AA2000 67-72 mm adaptor and 72 mm filter.  
With 50 mm USM lens, use AA2000 67-72 mm adaptor with 72 mm filter.  
With 100 mm Macro lens, use AA1040 58-52 mm adaptor and 72 mm filter.  
With 200 mm lens, use 72 mm filter.

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 Recommendations

- 3.0 GHz and 8 cores
- 16 - 32 GB RAM
- Windows 7 or 10, 64 bit
- Dual-monitor video output
- Ethernet 100/1000 or USB 2.0

\* Based on a virtual detector size of 1% of FOV.

\*\* Based on illuminant A or user calibration for specific spectra. Based on a virtual detector size of 1% of the FOV.

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