RADIANT
VISION SYSTEMS

ProMetric® Y
Imaging Photometer

Purpose-built for manufacturing test of flat panel displays and illuminated keyboards.

ProMetric Y Highlights

- **FPD Test**:
  Inspect for particle and line defects, surface defects (bubble, scratch), uniformity, light leakage, Mura and luminance
- **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 Photometer optimized for display and cosmetic inspection in production environments

ProMetric Y is a new family of rugged, small-form-factor Imaging Photometers optimized to test displays keyboards and cosmetic surfaces in high-volume production settings. The sophisticated measurement performance of these new photometers combined with purpose-built analysis software and local engineering expertise deliver a complete production test solution. Faster measurements deliver shorter takt times. Objective quantification replaces subjective human inspection to reduce operating costs. Reliable test analyses improve yield. Deploying a ProMetric Y-based 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, 2 megapixel (1600 x 1200) CCD sensor that is thermoelectrically cooled to provide accurate, repeatable 12-bit measurements. The ProMetric Y16 offers more resolution with a 16 megapixel (4896 x 3264) CCD sensor. The ProMetric Y29 provides even more resolution with a 29 megapixel (6576 x 4384) CCD sensor. Each ProMetric Y supports high-speed USB and Ethernet communications.

ProMetric Y incorporates industry-first **Smart Technology**™ innovations, including:

- **Smart Control**™ for fast, precise setup: Smart Control allows you to electronically adjust both focus and aperture settings of your 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.
- This greatly simplifies setup and ensures accurate measurement results.

ProMetric Y comes standard with ProMetric software to operate your photometer in a manual mode or to support your programming via an API. ProMetric Y is optimized for automation via optional TrueTest™ Automated Visual Inspection software and PM-KB Keyboard software. TrueTest and PM-KB provide complete, turnkey solutions for high-volume manufacturing of Flat Panel Displays, cell phones, tablets, notebooks, keyboards and lighting products.

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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 PM-KB software
- **NEW** - Multi-exposure High Dynamic Range (HDR) mode.

Specifications

Parameter	ProMetric Y2	ProMetric Y16	ProMetric Y29
Primary Application	Production Line Testing, Lighting	Production Line Testing	
CCD Resolution (pixels)	1600 x 1200	4896 x 3264	6576 x 4384
Total Megapixels	1.9	16.0	28.8
CCD Type	Cooled, Interline		
CCD A/D Dynamic Range	12 bits = 4096 gray scale levels		
High Dynamic Range (multi-exposure)	1,000,000:1		
Luminance (Minimum)	0.00001 cd/m² Limit of Detection 0.0001 cd/m²@ SNR = 60 0.0005 cd/m²@ SNR = 100		
Luminance (Maximum)	10^{10} cd/m² with optional ND filters[1]		
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; 20, 35, 50, 100, 200 mm	Electronically controlled focus and aperture; 35, 50, 100, 200 mm	
Field of View (Full Angle, H x V degrees)	20 mm 24° x 18° 35 mm 14° x 10° 50 mm 10° x 7° 100 mm macro 5° x 4° 200 mm 2.2° x 1.7°	35 mm 41° x 28° 50 mm 29° x 19° 100 mm macro 15° x 10° 200 mm 6.8° x 4.5°	35 mm 54° x 37° 50 mm 40° x 27° 100 mm macro 20° x 14° 200 mm 9° x 6°
Minimum Measurement Time (for 100 cd/m²)	0.3 sec - photopic	1.3 sec - photopic	2.0 sec - photopic
Spatial Measurement Capabilities	Luminance, Radiance, Illuminance, Irradiance, Luminous Intensity, Radiant Intensity,		
Units	foot-lambert, cd/m², nit, W/sr/m², foot-candles, lux, lux-s, W/m², W-s/m², candela, W/sr		
Communication Interface	Ethernet 100/1000, USB 2.0 and 3.0 compatible		
Power	External AC / DC adapter, 100-240 V, 50-60 Hz, 80 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		
Warranty	Two Years		

Specifications subject to change without notice.
[1]With 20 mm USM lens, use 72 mm filter.
With 35 mm USM lens, use AA2000 67-72 mm adaptor and 72 mm filter.
With 50 mm USM lens, use AA1050 58-72 mm adaptor with 72 mm filter.
With 100 mm Macro lens, use AA1060 55-52 mm adaptor and 52 mm filter.

The ProMetric Y-Series photometers, and the electronically controlled lenses supplied with it, 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 20 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/2.8 Macro USM	f/3.3 f/8
Canon EF 200 mm f/2.8 USM	f/3.3 f/8

System Requirements

- 2.6 GHz (Quad-core recommended)
- 4GB (16GB recommended)
- Windows 7 or 8, 64 bit
- Ethernet 100/1000, USB 2.0 and 3.0 compatible

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

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

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