

ProMetric® Y43

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, 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-based system increases output, improves quality, and controls cost to deliver a quick return on your production test investment.

The ProMetric Y43 Imaging Photometer uses a scientific-grade, 43-megapixel (8040 x 5360) CCD sensor that is thermo-electrically cooled to provide accurate, repeatable measurements. 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 Y43
Primary Application	Production Line Testing, Display Testing, OLED Testing, Advanced Vision
CCD Pixels	8040 x 5360
CCD Megapixels	43.1
CCD Type	Cooled, Interline
System Dynamic Range (single exposure, per pixel)	59 dB (1 x 1 binning)
	66 dB (2 x 2 binning)
High Dynamic Range (multi-exposure)	> 1,000,000:1
Luminance (Minimum)*	0.00001 cd/m ² Limit of Detection
	0.0001 cd/m ² @ SNR = 60
	0.0005 cd/m ² @ SNR = 100
Luminance (Maximum)	10 ¹⁰ cd/m ² 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; 35, 50, 100, 200 mm
Field of View (Full Angle, H x V degrees)	35 mm 55° x 37° 50 mm 40° x 28° 100 mm macro 20° x 14° 200 mm 11° x 7°
Minimum Measurement Time (for 100 cd/m ²)	1.4 sec
Spatial Measurement Capabilities	Luminance, Radiance, Illuminance, Irradiance, Luminous Intensity, Radiant Intensity,
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
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.

¹ 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.

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 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 the FOV.

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