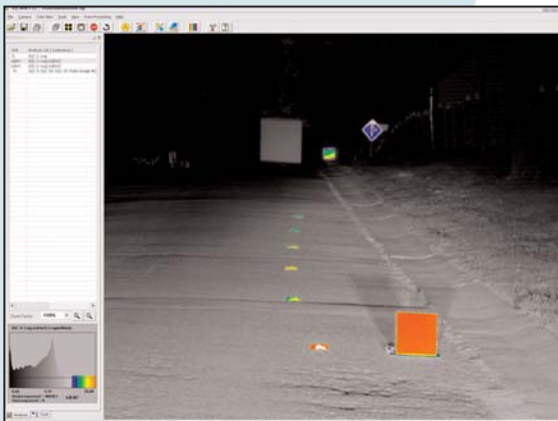


400A

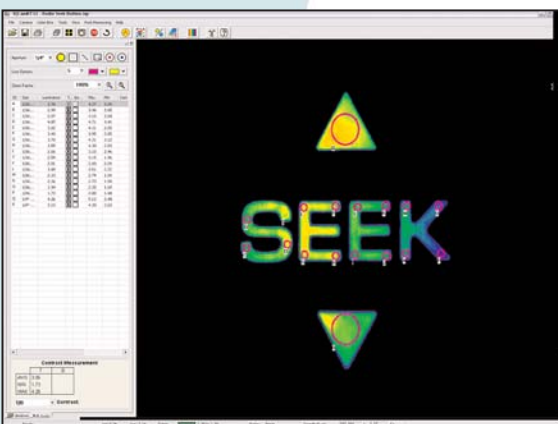
CCD Imaging Photometer



- ▶ **Fast Measurements**
- ▶ **High Sensitivity**
- ▶ **Excellent Image Fidelity**



A roadside is illuminated with car headlights. Several 30 cm x 30 cm reflectance plaques are placed at 5 m intervals down the road. The illumination of the roadway can be determined from the measured luminance of the reflectance plaques. This scene ranges from 0.04 to 28 cd/m².



A backlit automotive radio tuning button is measured with the 55mm macro lens. Aperture tools are placed on the image and a table of tool results is automatically created. The table may be pasted in Excel for further analysis.

The Lumetrix 400A is our best value Imaging Photometer. It has a 1.4 MegaPixel CCD instrument capable of measuring scene luminance from 0.01 to over 500,000 cd/m² – without density filters. With appropriate calibrations and user input, the 400A also measures illuminance (lux) and luminous intensity (candela). Aside from the cooling fan, the system has no moving parts. Measurements are shuttered electronically and clocked at 20MHz for the most reliable readings.

The system includes: Photopically corrected CCD imaging sensor, low noise electronics, 12-bit A/D and Firewire control.

Software Options

- RT32 for fast scene luminance analyses replacing spot meter functionality and easy to use on the production floor.
- Photometrica™ is a more sophisticated image analysis environment designed for engineers and scientists wanting to compare or compute results from various images using complex object definitions and tools.

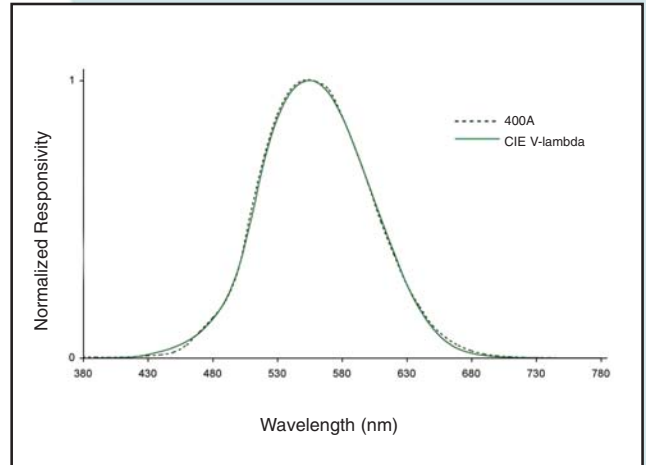
For automated applications, DLL and LabView drivers are available to automate all of the functionality of RT32 and Photometrica™.

Applications

- Airport and Runway Lighting
- Architectural Scenes
- Automotive Displays
- Automotive Exterior Lighting
- Automotive Interior Displays and Indicators
- CRT, LCD, DP, LED, OLED and Backlight Luminance
- Avionic Displays
- Glare Measurements
- Beam Patterns of Lamps and Luminaires
- Human Factors Evaluation
- Low Luminance Scenes
- Luminaires
- NVIS Panel Balancing
- Projection System Luminance, Illuminance, Luminous Intensity
- Roadway Lighting and Markings
- LCD, PDP, ELP, OLED, CRT, Digital Projectors

Detailed Specifications

Measurement Capabilities Units	Luminance, illuminance, luminous intensity cd/m ² , lux, ftL, cd, user defined
Sensor Size	1/2 inch
Sensor Type	Sony ICX205 Progressive Scan CCD with electronic shutter
Cooling	Optional TE cooling to 20°C below ambient
Binning*¹	2 x 2, 4 x 4, 8 x 8
Pixel Size	4.65 µm x 4.65 µm
Image Resolution	1392 x 1040 (H x V pixels) = approx. 1.45 MPixels
Image Digitization	12 bits
Wide Electronic Dynamic Range	Electronic range is extended by over 100,000X with exposure bracketing
Luminance Range*²	0.01 to 500,000 cd/m ²
Luminance Range with Optional ND Filters	0.01 to >1E8 cd/m ²
Luminance Sensitivity*³	0.01 cd/m ²
Integration Time at Lowest Sensitivity	10 s (5 min for TE cooled system)
Repeatability*⁴	0.5%
Accuracy*⁴	<3% typical
Exposure Timing Error	<50 ns
Total Measurement Time at 1 cd/m²	<1 s, typical
Lenses Available	C- or F-mount lenses: zoom, micro, macro, fisheye and others
Dimensions (W x H x D)	3.0" x 2.5" x 5.2" (5.9" cooled), not including lens
Weight	655 g (935 g, cooled) plus lens
Mounting	Standard 1/4" x 20 mounting on side or bottom
Computer Interface	IEEE1394 (Firewire interface)
Power Requirements	12V, 7W (13W cooled) supplied by Firewire or from AC/DC converter
Electrical Compliance	CE
Software	IQCamRT32, Photometrica™
Warranty	2 years, parts and labor



*1. Requires separate calibration. All specifications are at native resolution.

*2. Typical values when used with zoom lens.

*3. Reliable measurement threshold level: luminance stimulus to produce a response 100 counts above the dark noise level of the photometer.

*4. Relative to calibration standard, average of 6 x 6 pixel area, median filtered, illuminant A, 5 to 1000 cd/m², for all calibrated focus and zoom settings at F-5.6. Verified in center of each of 9 zones of the image. See our sample calibration reports for more information.

* Specifications are valid for F-mount lenses and zoom lenses with fields of view less than 40 degrees.

* Specifications are subject to change without notice.



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