WESTBORO PHOTONICS

A SERIES

CCD IMAGING PHOTOMETERS

400A 400A-C 500A 500A-C

400A

KEY FEATURES

- Fast Measurements
- Excellent Sensitivity
- Low Noise
- Reduced Dark Level Drift
- High Dynamic Range

APPLICATIONS

- Display Test
- Beam Pattern of Lamps and Luminaires
- Transportation Lighting
- Automotive and Avionic interiors
- Architectural Scenes
- Theatrical and Commercial Lighting
- Human Factors Engineering

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The A Series, 1.4 MegaPixel Imaging Photometers are proven digital imagers using progressive scan Sony CCD sensors.

SENSITIVITY AND NOISE

The fan-cooled electronics are very low noise and stable. Aside from the fan, there are no moving parts. Measurements are timed (shuttered) electronically and clocked at 20 MHz for the most reliable readings. To ensure measurement stability, the imagers automatically monitor pixel noise and correct for DC noise drift in each image.

With typical lenses, these photometers can reliably measure scenes as low as 0.015 cd/m^2 and up to 100,000 cd/m^2. Optional peltier cooling in the "C" models provides the ability to take exposures up to 5 minutes and to extend the low level limits significantly.

ACCURACY

The precise matching of the CIE V-lambda filter ensures accurate measurements. Electronic bracketing in Photometrica® will make sure that the optimal exposure is used to measure the lumiance levels at any part of the scene. Very high dynamic range scenes (with both very bright and dim areas) can be properly acquired with Photometrica® software and electronic bracketing methods. High dynamic range measurements can exceed 1,000,000:1.

VERSATILITY

The photometers can be configured with a wide assortment of zoom or fixed focal length lenses. The A Series photometers come with Photometrica® software – providing a versatile and productive platform to achieve the measurements and analysis for many applications.

500A OR 400A?

The 500A has slightly larger pixels and is therefore more sensitive than the 400A. The sensor in the 500A also has better smear specifications, so it is reccomended for the highest dynamic range applications.

POWER

Communication and 12V power is provided via the firewire (1394A) connection to either of the redundant firewire ports at the rear.

MECHANICAL

The imagers are designed to maximize usability and include sturdy cast aluminum housings, LED status indicators and a 1/4—20" thread mount on the bottom.

SPECIFICATIONS

A SERIES
CCD IMAGING PHOTOMETERS

MODEL	400A	400A-C	500A	500A-C
Measurement Capabilities	Luminance, Illuminance, Luminous Intensity, Ratio			
Units	cd/m^2, fL, lux, cd, %, user defined			
A/D	12-bit	12-bit	12-bit	12-bit
Sony Sensor Size and Type	1/2" ICX 205	1/2" ICX 205	2/3" ICX 285	2/3" ICX 285
Pixel Size (µm)	4.65 x 4.65	4.65 x 4.65	6.45 x 6.45	6.45 x 6.45
Image Resolution (H x V)	1392 x 1040	1392 x 1040	1392 x 1040	1392 x 1040
Dynamic Range	>100,000:1 with electronic bracketing			
Luminance Range (cd/m^2)*1	0.015 to 100,000	0.0008 to 100,000	0.01 to 100,000	0.0005 to 100,000
Optional ND Filters	10X, 100X, 1000X	10X, 100X, 1000X	10X, 100X, 1000X	10X, 100X, 1000X
Repeatability *2	0.5%	0.5%	0.3%	0.3%
Accuracy *2	3%, typical, relative to illuminant A calibration source			
Exposure Timing	Electronic Shutter, <10 ms to 4s			
Lenses Available	C- or F-mount	C- or F-mount	C- or F-mount	C- or F-mount
Dimensions (w x h x d) (without lens)	2.5" x 3.0" x 5.2"	2.5" x 3.0" x 5.9"	2.5" x 3.0" x 5.2"	2.5" x 3.0" x 5.9"
Weight plus lens	655 g	935 g	660 g	960 g
Power Requirements	7 W	13 W	7 W	13 W
Mounting	Standard 1/4"-20 mount on bottom			
Computer Interface	IEEE-1394B	IEEE-1394B	IEEE-1394B	IEEE-1394B
Electrical Compliance	CE and Part 15 Class A of FCC Rules			
Temperature	To cal specifications, 18 to 25 °C, Operating 5 to 40 °C; storage -30 to 60 °C, non-condensing			
Warranty	2 years	2 years	2 years	2 years

*1. Typical values when used with zoom lens. Reliable measurement threshold level: luminance stimulus to produce a response 97.5% below CCD saturation level (100 counts on the 12-bit scale).
*2. Relative to calibration standard average, of 6 x 6 pixel area, illuminant A, 5 to 1000 cd/m^2, for all calibrated focus and zoom settings of lenses with less than 30 degrees field of view at F-5.6. Uniformity is verified in center of each of 9 zones of the image. See our sample calibration reports for more information.
*Specifications are subject to change without notice

ORDERING INFORMATION

400A	Imaging Photometer, 1392 x 1040 Resolution
400A-C	Cooled Imaging Photometer, 1392 x 1040 Resolution
500A	Imaging Photometer, 1392 x 1040 Resolution
P501F	Cooled Imaging Photometer, 1392 x 1040 Resolution
PM-DEV	Matlab, VB, C# and C++ etc.

SYSTEM REQUIREMENTS

Windows 7, Windows XP
Installed IEEE-1394A interface with 12 V power
1GB RAM, 20GB HDD
1920 x 1200 resolution monitor recommended

New photometers include:
- Photometrica® software
- Calibration with one lens
- 1394A Interface cable

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