



SPECIFICATIONS

asteria

light meter

Asteria: luminance and flicker measurement device

Admesy's Asteria light meter provides a CIE 1931 high speed luminance measurement function, targeting application for display and lighting industries. Asteria works like all Admesy products on USB and RS232 and can perform all complex calculations inside due to a high speed CPU and large internal memory. The Asteria is available with lens system or cosine corrector, for luminance or illuminance measurements respectively. Besides, both lens and cosine corrector systems are suitable for response time and flicker measurements supporting the following standards.

- Contrast min/max
- Contrast RMS
- JEITA
- VESA
- Flicker percentage (IES)
- Flicker index (IES)



Highlights

- Absolute luminance and illuminance measurement according to the human eye (CIE1931 luminosity function)
- All flicker measurement standards supported for display (Contrast, JEITA, VESA) and lighting (percentage, index)
- Measure high and low frequencies at the same time through a high sample rate and large memory size
- Trigger input and output for in line applications
- Windows, Linux, OSX and embedded systems compatible
- SCPI command interface for easy integration in other applications
- Supported in all major programming languages Labview / Labwindows / Visual Studio (C++, C#, VB)/ etc.
- USBTMC standard compliant
- Integrating- or sampling mode available
- 3 gain stages for every mode
- Autorange function
- User calibration function and pre-programmed calibration values
- Trigger in and output for inline applications
- USB and RS232 communication interface
- USBTMC standard compliant
- Windows, Linux and MAC OSX compatible
- Directly supported in Labview, Labwindows, Visual Studio via VISA library. Other programming languages that support VISA can be used



Asteria general specifications

Interfaces

USB 2.0	USBMTC compliant, SCPI command set, full speed device
RS 232	For PC and embedded purposes, using same command set as USB
Trigger in & out	5V compliant

Power ratings

	Min voltage	Typical voltage	Max voltage	Max current
USB powered	4.75V	5.00V	5.25V	350mA

System information

Photo detector	Silicon photo diode
Spectral response	Approximates CIE 1931 spectral luminous efficiency curve, fs value 8% typical
Measurement parameters	Luminance, illuminance, flicker (contrast, JEITA, VESA, Percentage, Index), Response time.
Optical systems	10mm lens system & cosine corrector
Measurement speed in sample mode	180,000 samples/second. Memory for 250,000 samples. For samples/delay versus total measurement time see table below.
Operating Temperature	10-35°C (1)

Mechanical dimensions

Size (HxWxD)	69 x 31 x 93 mm
Mounting	12 M3 thread holes spread over four sides of Asteria
Weight	0.35 kg

Typical spectral sensitivity of Asteria light meter

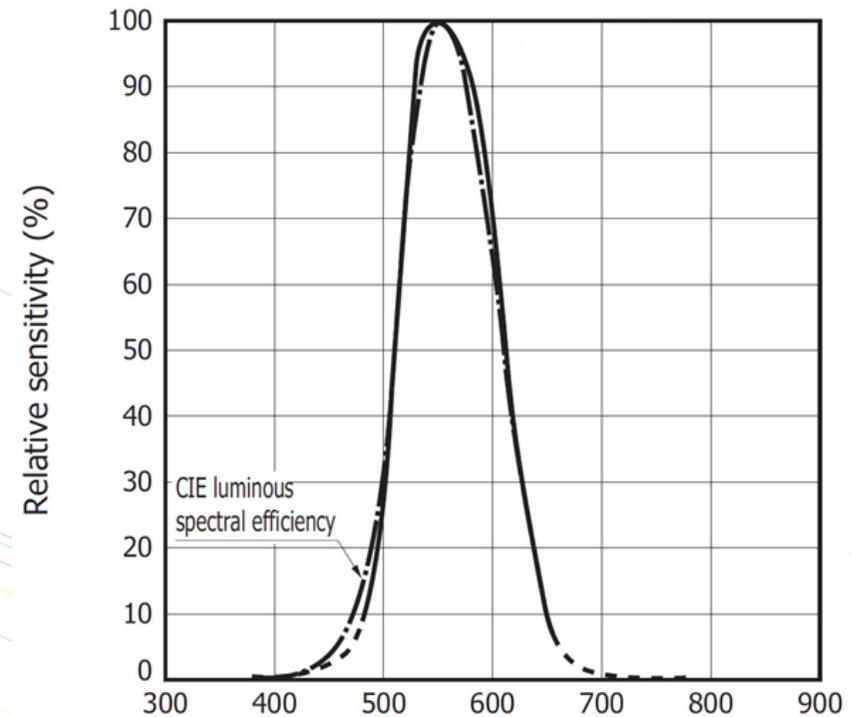


Fig 1 Spectral sensitivity of the Asteria light meter.



Asteria 10mm specifications

Optical system					
Optics	10mm lens				
Acceptance angle	Acceptance angle 5° (+/- 2.5)				
Measurement spot size	12 mm at 50 mm distance	15.5 mm at 75 mm distance	19 mm at 100 mm distance		
Sample mode signal frequency response					
Parameter	f _{3db} ¹				
Gain 1	DC – 20 kHz				
Gain 2	DC – 50 kHz				
Gain 3	DC – 120 kHz				
Measurement specification					
Parameter	Range	Accuracy	Light level (cd/m ²)	Repeatability ²	Speed (samples/s) ²
Luminance (Y) (integrating mode)	0.005 – 15,000 cd/m ² integration time between 1ms and 5 seconds	+/- 4% of measured value.	0.1	+/- 0.20%	4 - 10
		Measured at white image of LED LCD display. Luminance ~150 cd/m ²	1	+/- 0.10%	10 - 20
			5	+/- 0.05%	20 - 100
			>150	+/- 0.03%	20 - 100
Luminance (Y) (sampling mode)	1 – 15.000 cd/m ²	+/- 4% of measured value.	1	+/- 0.20%	4 - 10
		Measured at white image of LED LCD display. Luminance ~150 cd/m ²	5	+/- 0.10%	10 - 20
			20	+/- 0.05%	20 - 100
			>150	+/- 0.03%	20 - 100
Flicker (Contrast Method)	1 – 15.000 cd/m ²	+/- 1%	Flicker frequency: 30Hz AC/DC 10% sine wave at 10Cd/m ²		
Flicker (JEITA method)	1 – 15.000 cd/m ²	+/- 1dB	Flicker frequency: 30Hz AC/DC 10% sine wave at 10Cd/m ²		

¹ Based on calculation of a sinusoidal waveform.

² All measurements are performed 20 times on a LED LCD screen with sufficient signal noise ratio; value is based on 2 sigma. Luminance values are based on best performance possible, while measurement speed is determined by Admesy with a signal noise ratio which is still acceptable according Admesy. Sample speed depends on the measured sample as well: If the sample uses PWM it will take longer so use the lower rated values. Detailed measurement data is available upon request.



Asteria cosine corrector specifications

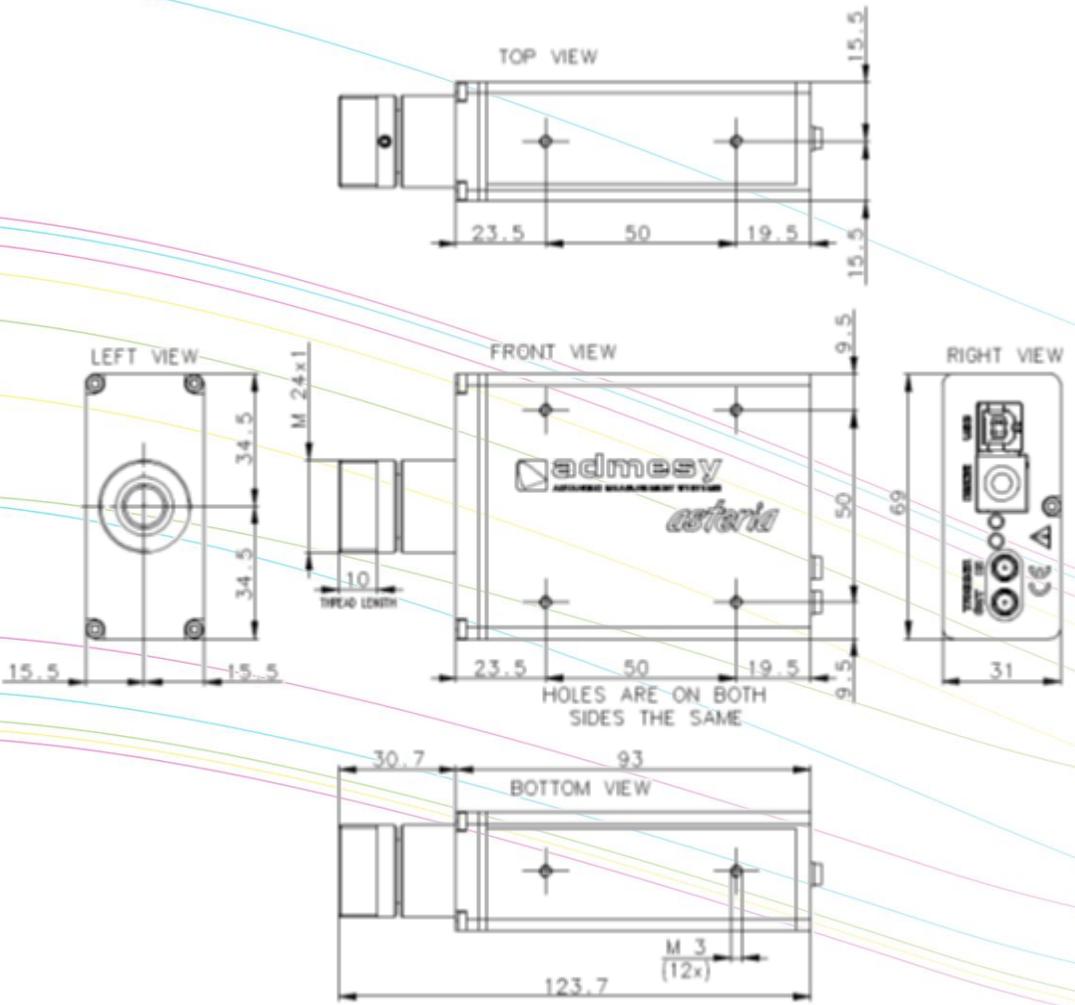
Optical system					
Optics	1 cm ² cosine corrector				
Cosine response	Lambertian				
Sample mode signal frequency response					
Parameter	f _{3db} ¹				
Gain 1	DC – 20 kHz				
Gain 2	DC – 50 kHz				
Gain 3	DC – 120 kHz				
Measurement specification					
Parameter	Range	Accuracy	Light level (lx)	Repeatability ²	Speed (samples/s) ²
Illuminance (Y) (integrating mode)	0.005 – 15,000 lx integration time between 1ms and 5 seconds	±4% of measured value. Measured on halogen light source with illuminance level ~1800 lx	1	±0.20%	4 - 10
			10	±0.10%	10 - 20
			50	±0.05%	20 - 100
			>1500	±0.03%	20 - 100
Illuminance (Y) (sampling mode)	1 – 150.000 lx	±4% of measured value. Measured on halogen light source with illuminance level ~1800 lx	10	±0.20%	4 - 10
			50	±0.10%	10 - 20
			200	±0.05%	20 - 100
			>1500	±0.03%	20 - 100
Percentage flicker	1 – 150.000 lx	+/- 1% Flicker frequency: 100Hz AC/DC 10% sine wave at 100 lux			
Flicker index	1 – 150.000 lx	+/- 0.01 Flicker frequency: 100Hz AC/DC 10% sine wave at 100 lux			

¹ Based on calculation of a sinusoidal waveform.

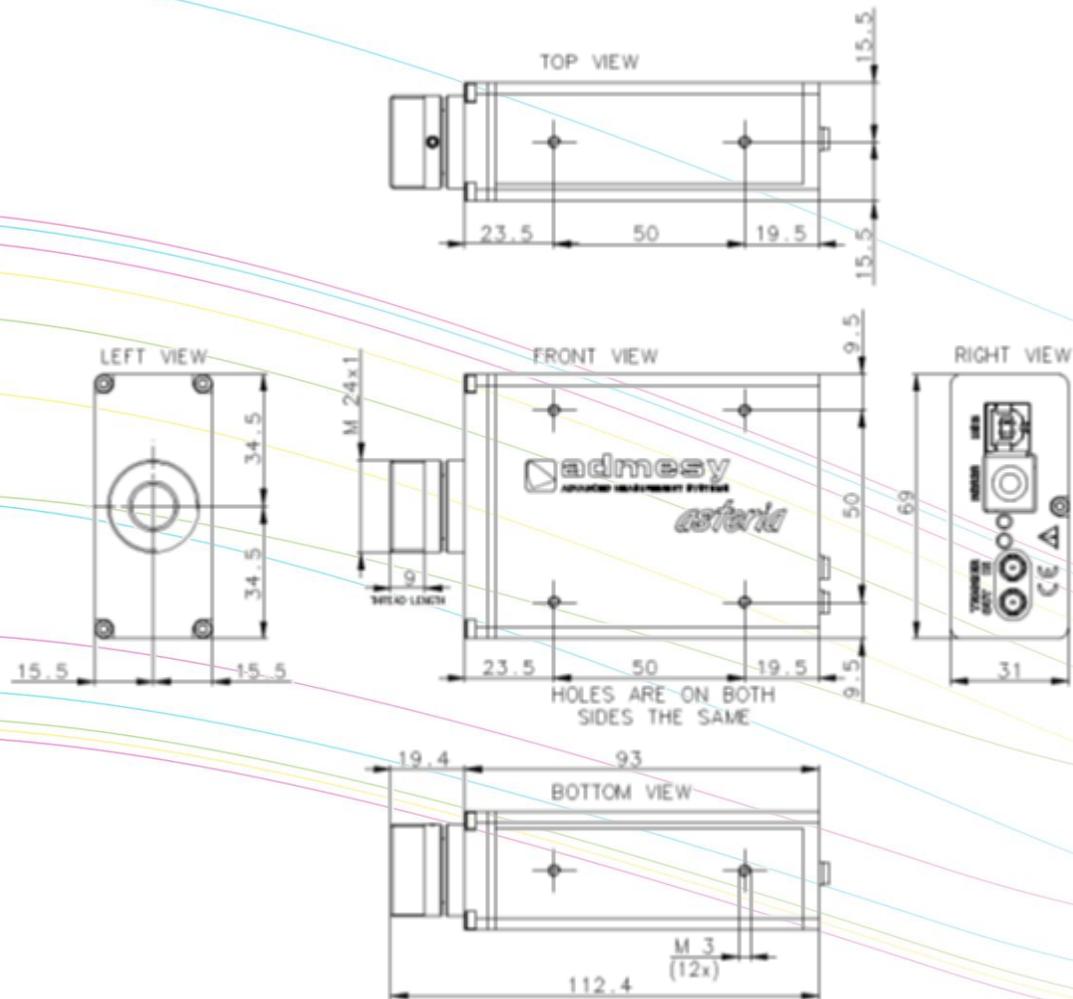
² All measurements are performed 20 times on a halogen lamp with sufficient signal noise ratio; value is based on 2 sigma. Illuminance values are based on best performance possible, while measurement speed is determined by Admesy with a signal noise ratio which is still acceptable according Admesy. Sample speed depends on the measured sample as well: If the sample uses PWM it will take longer so use the lower rated values. Detailed measurement data is available upon request.



Asteria 10mm dimensions



Asteria cosine corrector dimensions



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