



SPECIFICATIONS FOR LED / SSL MEASUREMENTS

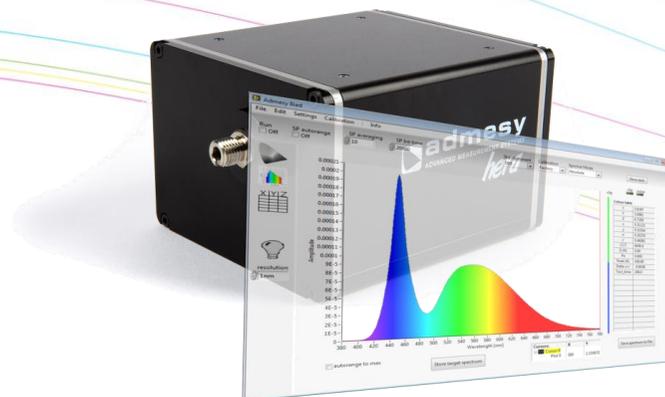
hera

spectrometer

Hera for LED / SSL measurements: cost effective spectrometer for lighting measurements

The Hera Series spectrometers is ideal for LED measurements where ease of use, stability, performance and price are key factors. Available in various spectral ranges. VIS spectrometers ranging from 380 to 780nm (Hera 01) and 360 to 830nm (Hera 02). A UV spectrometer with a range from 190 to 435nm (Hera 03) and UV-NIR with a range of 200 to 1100nm (Hera 04).

For measurements of light sources Admesy offers a range of integrating spheres which can be connected through M8 fiber connections. A fixed position fiber connector has been developed to connect the optical fiber in a fixed and uniform way from calibration to final use. Due to this fixed position measurement results are more stable. Furthermore, the Hera series is available in a variety of optical systems: 5, 10 or 20mm collimating lens or a 1cm² cosine corrector.



Highlights

- Various spectral ranges including UV, VIS and NIR
- Determines both spectral output and colour values
- Autorange function
- Excellent linearity over entire dynamic range
- Dark current compensated, virtually zero over entire integration range
- Holographic grating for low stray light
- USBTMC compliant, SCPI command set, high speed device
- USB, RS232, Ethernet connections and trigger in & out for ideal system integration
- All calculations are carried out inside the device, saving processing power in production environments
- Robust housing, optimized for mounting and protection in harsh production environments



Speed & ease of use

Admesy strongly believes in developing and manufacturing devices where ease of use and speed are key factors. In order to achieve these aspects, Admesy considers the following aspects of spectrometers to be taken care of.

- Wavelength calibration
- Dark current
- Linearity
- Absolute calibration

Calculations and compensations are done in a staggering 14ms. All this is possible due to the high speed processor inside the Hera combined with algorithms developed for this specific device. In production processes, no external calculation power is needed from computers. Data can be used directly in production settings without any delay of processing data afterwards. This saves time and processing power of the operating system of a production line.

When for example setting the integration time to 10ms, full calibrated spectral data is processed within 24ms. This includes transferring data through high speed USB. This makes the Hera series an ideal LED sorting device where speeds up to 50 LEDs per second can be achieved.

Hera general specifications

Hera series	
Non linearity	<1%
Spectral resolution	Selectable 0.5nm, 1nm, 2.5nm, 5nm or 10nm
Measurement parameters	Spectral output, radiometric data or colour data (Lumen, xy, DWL, PWL, CRI, CCT, etc.)
Data processing time	14ms
Interfaces	High speed USB, RS232, Ethernet, Trigger connections
Size (HxWxD)	100 x 80 x 55 mm (without lens system)
Power consumption	1250mW USB powered
Weight	0.35 kg
Operating temperature	10-35°C



Hera series specifications

Hera 01	
Spectral range	380-780nm
Optical resolution (FWHM)	2.3nm
Order sorting filter	2 nd order sorting on chip
Wavelength accuracy	+/-0.5nm
Stray light	<0.03%
Lumen accuracy	+/-4%
Chromaticity accuracy	+/-0.002
Luminous flux (AIS 75) ¹	1m lm – 60lm
Luminous flux (AIS 150) ¹	5m lm – 300lm
Luminous flux (AIS 250) ¹	10m lm – 600lm

Hera 03	
Spectral range	190-435nm
Optical resolution (FWHM)	0.7nm
Order sorting filter	No order sorting on chip
Wavelength accuracy	+/-0.5nm
Stray light	<0.03%
Lumen accuracy ²	+/-4%
Chromaticity accuracy	+/-0.002
Luminous flux (AIS 75) ¹	TBD
Luminous flux (AIS 150) ¹	TBD
Luminous flux (AIS 250) ¹	TBD

¹ OD filters can be applied for higher ranges in integrating spheres.

² After calibration with calibration standard, Hera 03 is checked with 400nm LEDs.

Hera 02	
Spectral range	360-830nm
Optical resolution (FWHM)	2.3nm
Order sorting filter	2 nd order sorting on chip
Wavelength accuracy	+/-0.5nm
Stray light	<0.03%
Lumen accuracy	+/-4%
Chromaticity accuracy	+/-0.002
Luminous flux (AIS 75) ¹	1m lm – 60lm
Luminous flux (AIS 150) ¹	5m lm – 300lm
Luminous flux (AIS 250) ¹	10m lm – 600lm

Hera 04	
Spectral range	200-1100nm
Optical resolution (FWHM)	1.6nm
Order sorting filter	Linear variable filter
Wavelength accuracy	+/-0.5nm
Stray light	<0.03%
Lumen accuracy	+/-4%
Chromaticity accuracy	+/-0.002
Luminous flux (AIS 75) ¹	TBD
Luminous flux (AIS 150) ¹	TBD
Luminous flux (AIS 250) ¹	TBD

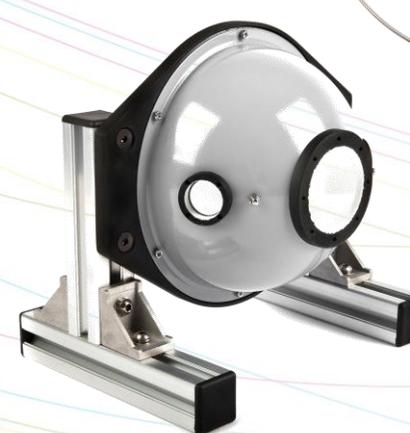


Integrating spheres, fibers and OD filters

Admesy offers three integrating sphere sizes. Besides, Admesy can help with customizing integrating spheres for production processes or (re)calibrate integrating spheres. Admesy uses a special M8 fiber connection which has been developed to connect the optical fiber in a consistent way to ensure best possible repeatability.

A higher measurement range can be achieved by implementing neutral density filters (OD filters) in the measurement setup. Admesy offers several OD filters to optimize the Hera for any measurement setup.

Model	Diameter	Auxiliary lamp	Application	Type of DUT
AIS 75	75mm	No	Production	<ul style="list-style-type: none"> Standard single LEDs
AIS 150	150mm	Yes	Production Laboratory	<ul style="list-style-type: none"> Standard single LEDs High power LEDs
AIS 250	250mm	Yes	Laboratory, CIE 127 compliant for 2π measurements	<ul style="list-style-type: none"> Standard single LEDs High power LEDs Small LED modules



Typical speed & performance Hera-01 with AIS 75

Measurement conditions				
Used light source	White LED			
Integrating sphere size	75mm (AIS 75)			
Spectral resolution	1nm			
Averaging	1			
Autorange	Off			
Temperature	24°			
Repeatability at 60lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	2.5	<0.2%	+/-0.003	16.5
Repeatability at 15lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	10	<0.2%	+/-0.0003	24
+/-40%	5	<0.3%	+/-0.0004	19
+/-20%	2.5	<0.4%	+/-0.0008	16.5
Repeatability at 5lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	32	<0.2%	+/-0.0003	46
+/-40%	16	<0.3%	+/-0.0004	30
+/-20%	8	<0.4%	+/-0.0008	22
+/-10%	4	<0.7%	+/-0.0012	18
Repeatability at 1lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	160	<0.2%	+/-0.0003	174
+/-40%	80	<0.3%	+/-0.0004	94
+/-20%	40	<0.4%	+/-0.0008	54
+/-10%	20	<0.7%	+/-0.0012	34
Repeatability at 0.1lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	1600	<0.2%	+/-0.0003	1614
+/-40%	800	<0.3%	+/-0.0004	814
+/-20%	400	<0.4%	+/-0.0008	414
+/-10%	200	<0.7%	+/-0.0012	214



Typical speed & performance Hera-01 with AIS 150

Measurement conditions				
Used light source	White LED			
Integrating sphere size	150mm (AIS 150)			
Spectral resolution	1nm			
Averaging	1			
Autorange	Off			
Temperature	24°			
Repeatability at 300lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	2.5	<0.2%	+/-0.003	16.5
Repeatability at 75lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	10	<0.2%	+/-0.0003	24
+/-40%	5	<0.3%	+/-0.0004	19
+/-20%	2.5	<0.4%	+/-0.0008	16.5
Repeatability at 25lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	32	<0.2%	+/-0.0003	46
+/-40%	16	<0.3%	+/-0.0004	30
+/-20%	8	<0.4%	+/-0.0008	22
+/-10%	4	<0.7%	+/-0.0012	18
Repeatability at 5lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	160	<0.2%	+/-0.0003	174
+/-40%	80	<0.3%	+/-0.0004	94
+/-20%	40	<0.4%	+/-0.0008	54
+/-10%	20	<0.7%	+/-0.0012	34
Repeatability at 0.5lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	1600	<0.2%	+/-0.0003	1614
+/-40%	800	<0.3%	+/-0.0004	814
+/-20%	400	<0.4%	+/-0.0008	414
+/-10%	200	<0.7%	+/-0.0012	214

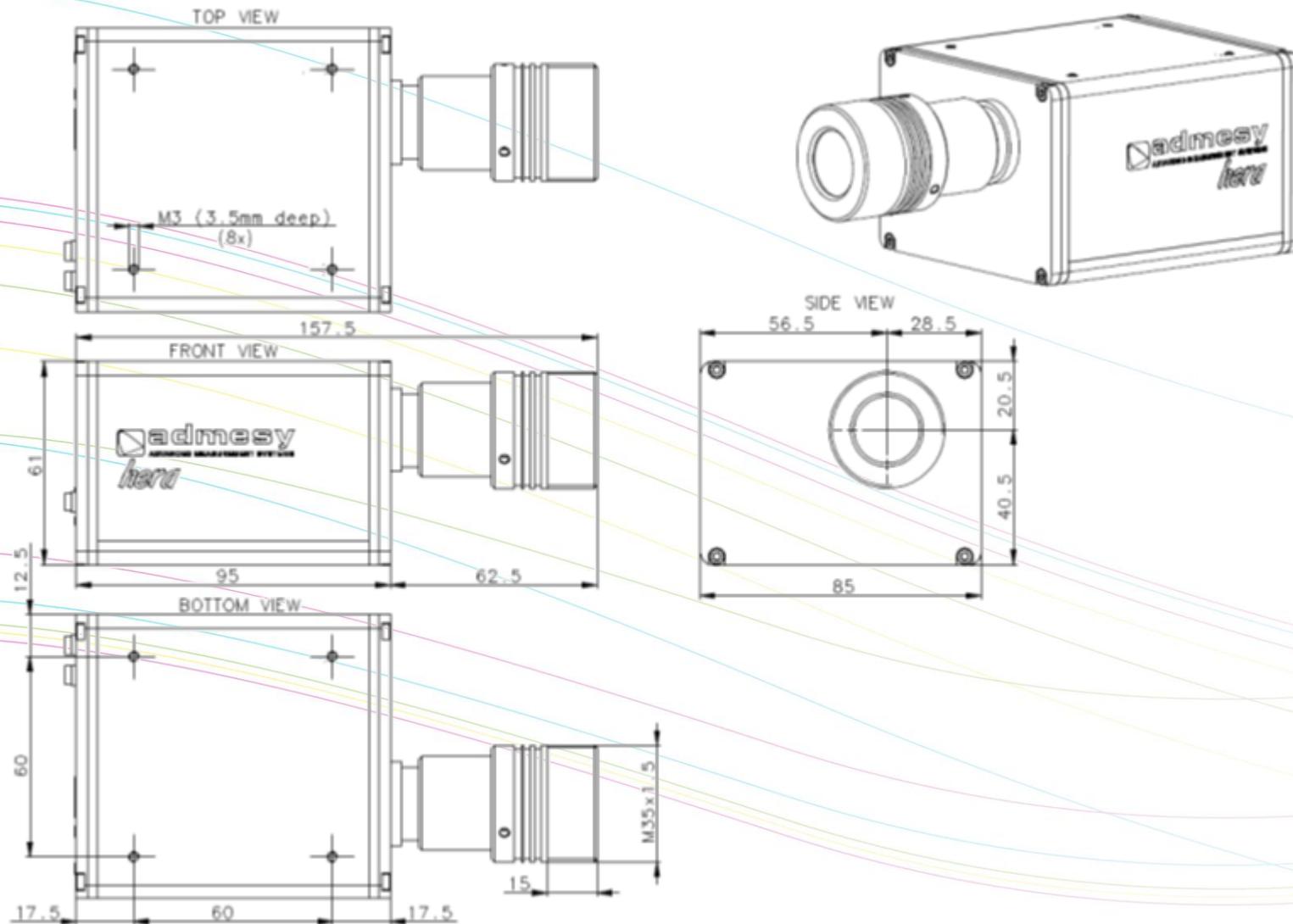


Typical speed & performance of Hera-01 with AIS 250

Measurement conditions				
Used light source	White LED			
Integrating sphere size	250mm (AIS 250)			
Spectral resolution	1nm			
Averaging	1			
Autorange	Off			
Temperature	24°			
Repeatability at 600lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	2.5	<0.2%	+/-0.003	16.5
Repeatability at 150lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	10	<0.2%	+/-0.0003	24
+/-40%	5	<0.3%	+/-0.0004	19
+/-20%	2.5	<0.4%	+/-0.0008	16.5
Repeatability at 50lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	32	<0.2%	+/-0.0003	46
+/-40%	16	<0.3%	+/-0.0004	30
+/-20%	8	<0.4%	+/-0.0008	22
+/-10%	4	<0.7%	+/-0.0012	18
Repeatability at 10lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	160	<0.2%	+/-0.0003	174
+/-40%	80	<0.3%	+/-0.0004	94
+/-20%	40	<0.4%	+/-0.0008	54
+/-10%	20	<0.7%	+/-0.0012	34
Repeatability at 1lm				
Saturation level	Integration time (ms)	Lumen (2sigma)	Chromaticity x,y (2sigma)	Tact time (ms)
+/-80%	1600	<0.2%	+/-0.0003	1614
+/-40%	800	<0.3%	+/-0.0004	814
+/-20%	400	<0.4%	+/-0.0008	414
+/-10%	200	<0.7%	+/-0.0012	214



Hera dimensions



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