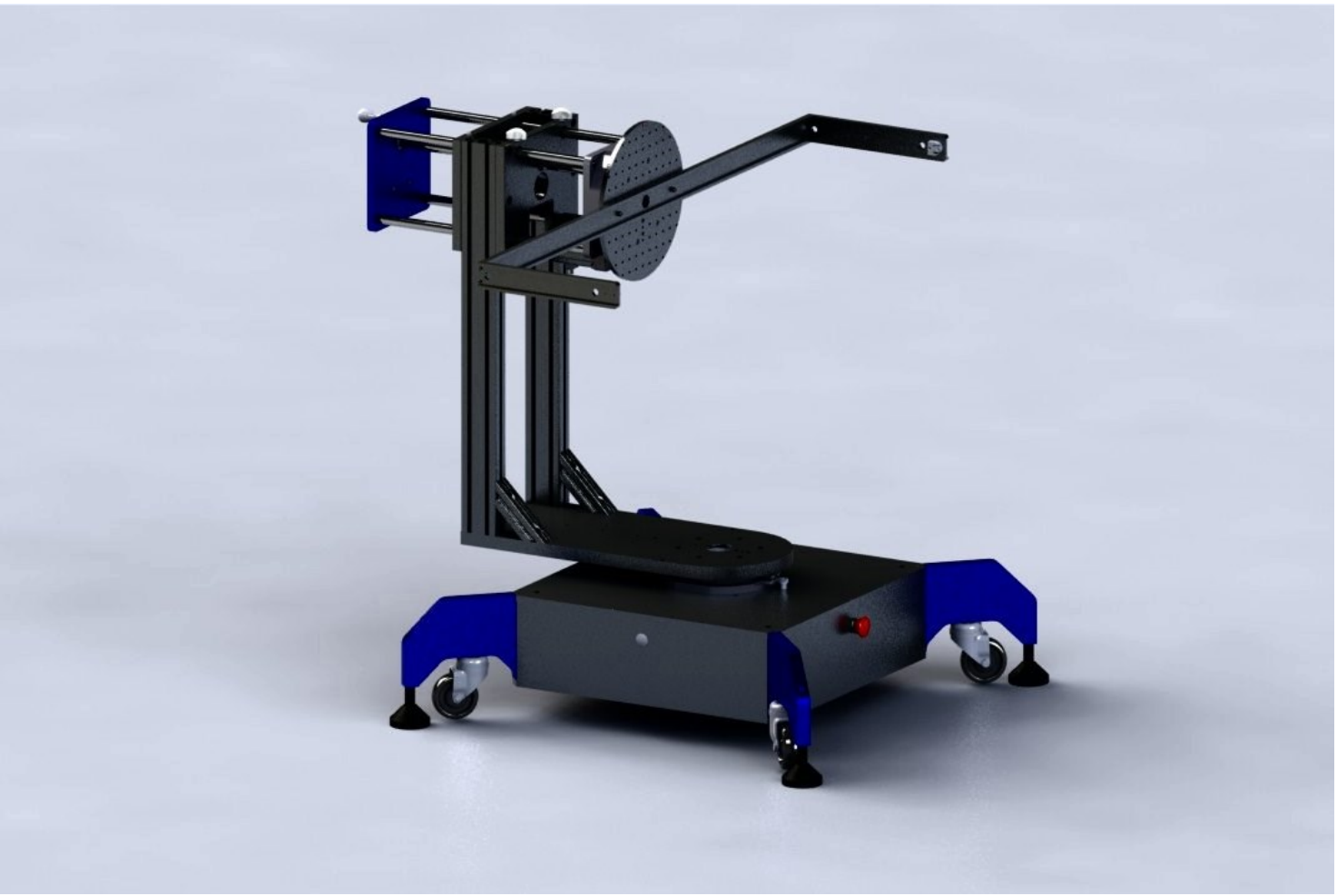
GAMMA SCIENTIFIC
Light Measurement Solutions



940 LED Series Goniophotometers

9925 Carroll Canyon Road San Diego, CA 92131 | 858-279-8034 | contact@gamma-sci.com | www.gamma-sci.com

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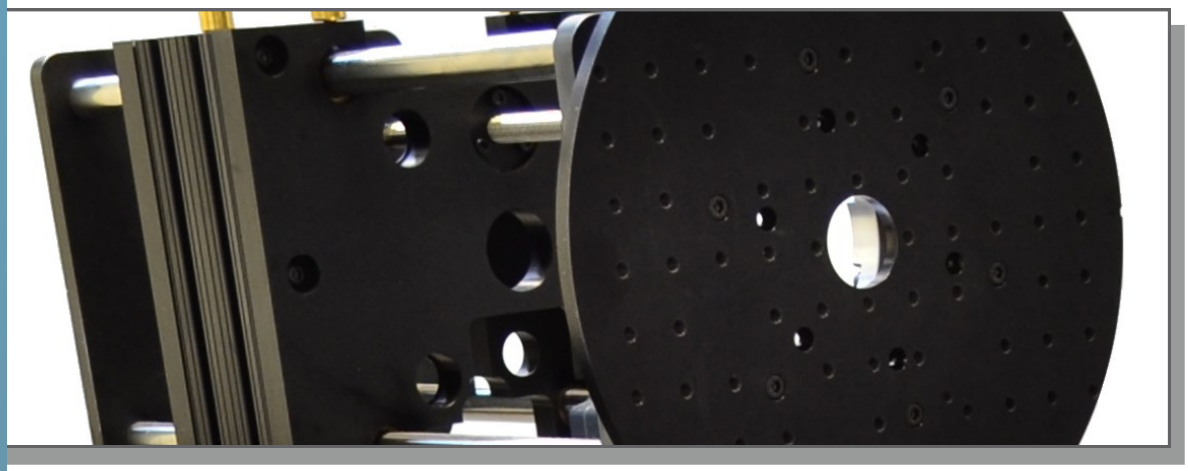

LED Measurements You Can Trust

Gamma Scientific's 940 LED-1200 and 940 LED-1850 Goniophotometers are designed to analyze angle dependent spatial radiation properties of LED luminaires, lamps and modules.

With an angular resolution of 0.01° the goniophotometers capture highly accurate and repeatable LED measurements.

The 940 LED-1200 and LED-1850 are in conformity with CIE, DIN and IES standards.

Instrument calibration is performed at Gamma Scientific's accredited laboratory using NIST traceable standards.

Gamma Scientific Spectroradiometers

Gamma Scientific 940 LED Series Goniophotometers utilize GS-1220 spectroradiometers which are optimized for quality control and high-speed LED testing applications, with up to 100 ms optical integration time.

Features

- Type C Goniophotometer with horizontal optical axis
- 940 LED-1200: measures samples up to 1250 mm in diameter and 50 kg
- 940 LED-1850: measures samples up to 1850 mm in diameter and 50 kg
- Angular analysis of spectral and colorimetric quantities
- Measures luminous intensity distribution and luminous flux
- Exceptional accuracy via high-resolution bandwidth coverage
- Superior wavelength and color accuracy
- Near-real-time measurement
- NIST-traceable calibration

About Gamma Scientific

Since 1961 Gamma Scientific has produced LED, display and light measurement test solutions for production and R&D environments. Gamma Scientific instruments are trusted by leading global organizations that require high-speed, precision measurements and custom configurations for the most challenging environments. Gamma Scientific also operates a NVLAP accredited laboratory that performs LM-79/LM-80 LED testing and is ISO 17025 compliant. NVLAP Lab Code 200823-0.

To view the complete line of test and measurement solutions from Gamma Scientific, please visit our website at www.gamma-sci.com.

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940 LED Goniophotometer System Specifications

	Model 940 LED-1200	Model 940 LED-1850
Equipment Setup	Stable base with integrated controller	
Height	1118 mm	1448 mm
Width	940 mm	940 mm
Depth	940 mm	940 mm
Weight	approx. 50 kg	approx. 52 kg
Height of Optical Axis	965 mm	1295 mm
Interface	USB for connecting to a PC	
Power Supply	115 VAC or 230 VAC (50-60 Hz)	115 VAC or 230 VAC (50-60 Hz)
Power Rating	120 W max	120 W max
	Goniometer	
CIE Goniometer Type	Type C with horizontal optical axis	
Driver	Stepper motors	
Angular Range C (horizontal) axis	± 160° with end switches	
Angular Range Gamma (vertical) axis	± 160° with end switches	
Resolution of Angle Encoder	0.01°	
Reproducibility C Axis	≤0.1° (at max sample load)	
Reproducibility Gamma Axis	≤0.05° (at max sample load)	
Angular Speed C Axis	16 speeds (minimum) selectable to maximum 25°/s	
Angular Speed Gamma Axis	16 speeds (minimum) selectable to maximum 14°/s	
Travel Range Z Axis	311 mm	
Alignment Laser	Integrated in the center of rotation of the y axis, 1 mW, laser class 2	
	Sample Table	
Mounting Plate	350 mm diameter	350 mm diameter
Maximum Sample Size	1250 mm diameter	1850 mm diameter
Maximum Sample Mass	up to 50 kg	up to 50 kg

* The information contained in this data sheet is based on Gamma Scientific's internal evaluation and is subject to change at any time without notice

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GS-1220 Spectroradiometers

High Speed LED Testing

GS-1220 spectroradiometers are optimized for quality control and high speed LED testing applications, with up to 100 ms optical integration time.

The GS-1220 spectroradiometer features a proprietary optical design and back illuminated CCD technology that provides exceptional low-light measurements, superior blue light sensitivity and highly accurate measurements of wavelength, color and power.

The 2048 pixel back illuminated CCD is temperature cooled for superior instrument repeatability.

Features

- High resolution, temperature cooled-back illuminated 2048 pixel CCD Sensor
- Exceptional accuracy via high-resolution bandwidth coverage
- Superior wavelength and color accuracy
- Near-real-time measurement
- Spectral ranges: 250-900 nm, 360-900 nm, 360-1100 nm
- NIST-traceable calibration
- Integrated neutral density filter wheel
- Hardware input/output trigger
- Windows based control/analysis software with Excel integration
- Wide variety of test sockets for many LED types

Trusted for Over 50 Years

As the inventors of the first high-performance, computer-controlled LED spectroradiometers, Gamma Scientific has continued to set the standard in spectroradiometer accuracy and reliability. Gamma Scientific instruments have been trusted by the world's leading organizations to provide accurate measurements for over 50 years.

About Gamma Scientific

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GS-1220 Spectroradiometer Specifications

Detector and Wavelength Specifications			
Spectrometer Model	**GS-1220-0**	**GS-1220-1**	**GS-1220-2**
Nominal Spectral Range	250-900nm UV-VIS	360-900nm VIS	360-1100nm VIS-NIR
Datapoint Interval	0.32 nm	0.32 nm	0.35 nm
Spectral Bandwidth	Built-In User Selectable Half-Power Bandwidth (HPBW) **Bold is factory setting**		
	10 nm	10 nm	10 nm
	5.0 nm	5.0 nm	5.0 nm
	2.5 nm	**2.5 nm**	**2.5 nm**
	1.4 nm	1.4 nm	1.4 nm
	1.0 nm	1.0 nm	1.0 nm
Wavelength Repeatability	0.02 nm	0.02 nm	0.02 nm
Wavelength Accuracy	+/- 0.1 nm	+/- 0.1 nm	+/- 0.1 nm
Accuracy[1]			
Luminous Intensity	± 1%	± 1%	± 1%
Luminous Flux	± 1%	± 1%	± 1%
Chromaticity (CIE1931 xy)[2]	x,y=±0.0015	x,y=±0.0015	x,y=±0.0015
Dominant Wavelength[2]	± 0.5 nm	± 0.5 nm	± 0.5 nm
Sensitivity[3]			
Luminous Intensity (10:1 signal-to-noise)	0.02 mcd to 15 kcd	0.02 mcd to 15 kcd	0.02 mcd to 15 kcd
Luminous Flux[4] (12" sphere ; 10:1 signal-to-noise)	1 mlm – 240 klm	1 mlm – 240 klm	1 mlm – 240 klm
Illuminance Sensitivity (10:1 signal-to-noise)	0.02 mlux - 15,000 lux	0.02 mlux - 15,000 lux	0.02 mlux - 15,000 lux
Measuring time (range)	2 µsec to 2.67 sec	2 µsec to 2.67 sec	2 µsec to 2.67 sec
Measuring Time at 1 mcd (10:1 signal-to-noise)	40 msec	40 msec	40 msec
Specifications for All Spectrometers			
Stray Light	Less than 1 x 10 –4 (at 8 times the HPBW from HeNe Laser Line)		
Spectral Sensor	High Resolution 2048 pixel CCD Sensor		
Temperature Stabilized Sensor	-5° C below ambient		
Electrical Resolution	16 Bit		
Dynamic Range (single scan)	6,670:1		
Computer Interface	USB 2.0		
Control Software	Lightouch LED software for Windows		
Dimensions:	5.25" H x 12.00" W x 10.20" L (13.34" cm x 30.48 cm W x 25.91 cm L)		
Weight	20 lbs (9.1 kg)		

1: Accuracy specifications assume sufficient signal to noise and are valid immediately after proper calibration, relative to the calibration standard.
2: Applies to colored LEDs with sufficient signal-to-noise ratio.
3: Sensitivity specifications assume a 10:1 signal-to-noise ratio for white 5000K CCT LED's.
4: Luminous flux is with a GS-IS300 integrating sphere calibrated with Deuterium and tungsten standards to cover a 250 to 860nm range
5: Standard Operating Range for Gamma Scientific Instruments- Temperature: Minimum: 0°C (32°F) - Maximum: 35°C (95°F); Relative Humidity (Non-Condensing): Minimum: 20% - Maximum 70%
6: The information contained in this data sheet is based on Gamma Scientific's internal evaluation and is subject to change at any time without notice.
7: Revised on April 9, 2015