

UHE Solar Simulators

► NS and NL-Series



Features

- Industry Leading Efficiency
- Class AAA
- Turn-key Operation
- Suitable for larger target areas
- Includes AMI.5G Filter
- Vertical with option for horizontal operation

Applications

- Photovoltaic Testing
- Material Characterization and Degradation Testing
- Photochemistry
- Accelerated Age Testing

UHE Solar Simulator Series

Overview

The UHE-NS and UHE-NL solar simulator series are class AAA and have turn key operation system. Due to their very high efficiency these can be used for larger target areas and larger distances.

The UHE-NS/NL family of solar simulators are feature rich, convenient integrated systems suitable for a variety of research and testing requiring a stable and reliable uniform light source.

UHE-NL series solar simulators can produce 1 Sun or more solar irradiance at a variety of solar spectral classifications (with an appropriate AM filter).

All of the electronics are contained inside the UHE-NL system to reduce clutter. With the UHE-NL all of the simulator functions can be controlled from a single touch screen interface or from the provided Sciencetech Power Control software.

Specifications

Model	UHE-NS -75	UHE-NS -100	UHE-NL -150	UHE-NL -200	UHE- NL-250	UHE- NL-300
Part #	166-9026	166-9026	166-9026	166-9029	166-9030	166-9031
Illuminated Area 1 Sun AM1.5G (mm)	75x75	100x100	150x150	200x200	250x250	300x300
Illuminated Area 1 Sun AM0 (mm)	50x50	70x70	100x100	140x140	175x175	200x200
Working Distance (mm)	200 ± 10%	300 ± 10%	500 ± 10%	575 ± 10%	650 ± 10%	650 ± 10%
Non-Uniformity (Class)	A (<2%)					A (<3%)
Spectral Match (Class)	A (different spectral filters available)					
Temporal Stability (Class)	A+ (<1% over 10 seconds)					
Spectral Range (nm)	300-1800					
Collimation half-angle (deg)	8	8	8	9	9	10
Typical Irradiance	1 sun ± 10%					
Lamp Power (W) Model #	150, (XE150)	300, (XE300)	500, (XE500)	1000, (XE1000)	1600, (XE1600)	1600, (XE1600)
Control Unit	Integrated Touchscreen Control Unit					
Dimensions L×W×H (mm)	613×315×1461 (V) / 1461× 315×613x (H)		970×437×1917 (V) / 1917×437×437 (H)			
Weight (kg)	80		95			
Power Requirements	110-115V/60 Hz 10A or 220-240V/ 50Hz, 10A			220-240V/ 50Hz, 10A		
Line Regulations	< 0.2%					

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Configurations

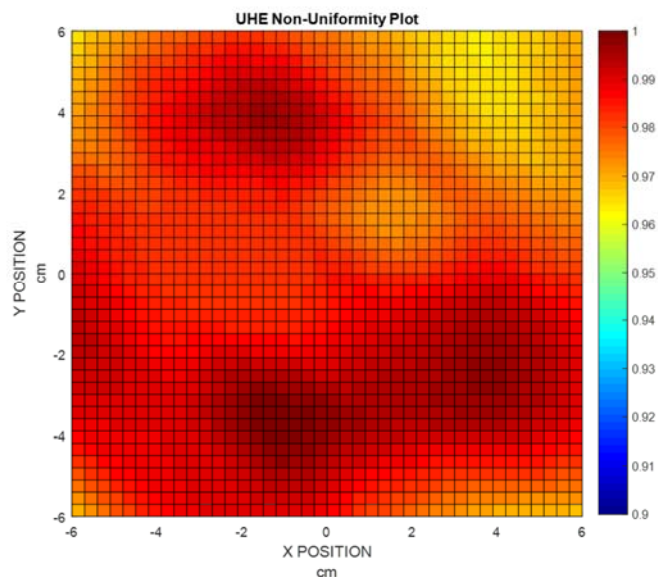
Both series are designed for either downward facing or horizontal beam operation. In downward facing beam orientation both the UHE-NS and UHE-NL produces uniform light slightly above standard desk height. This configuration allows for operation of the simulator from either a standing or seated position.

Large testing area and working distances can be achieved for easy integration.

Numerous sample area accessories, instrument configuration options and accessories are available.

See the configuration options at the end of this brochure for more information and dimensions.

UHE-NS/NL simulators are aligned and tested for Uniformity in our calibration laboratory. Strict quality control procedures are enforced to ensure simulators meet the required specifications.



Uniformity is defined as :

$$\text{Uniformity (\%)} = (\text{Max Irradiance} - \text{Min Irradiance}) / (\text{Max Irradiance} + \text{Min irradiance}) \times 100\%$$

Uniformity is measured using the following methods:

- Compliant to ASTM E 927-05. Measured with 36 point in 6 x 6 grid. Detector is no bigger than each grid size
- Compliance to IEC 60904-9-2007 and JIS C 8912 can tested upon request

Spectral Match is measured with a calibrated spectroradiometer with grating monochromator and broad band detector. Measurement resolution is set < 10nm.

Temporal Instability is defined as:

$$\text{Temporal Instability (\%)} = (\text{Max irradiance} - \text{Min irradiance}) / (\text{Max irradiance} + \text{Min Irradiance}) \times 100\%$$

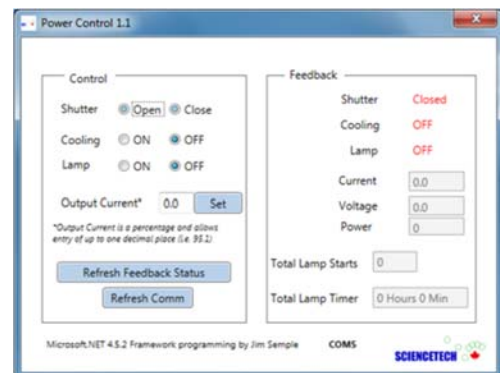
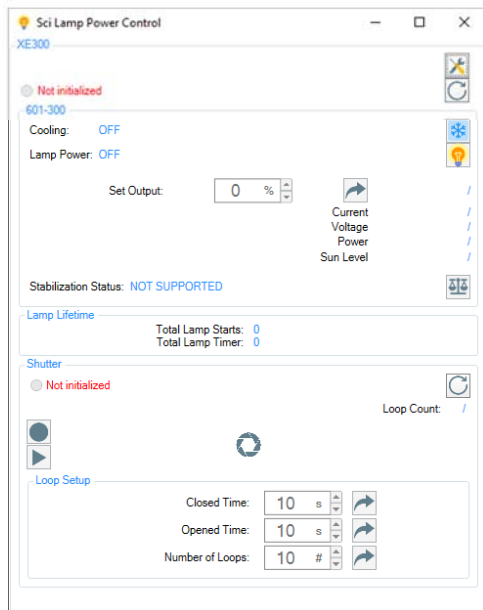
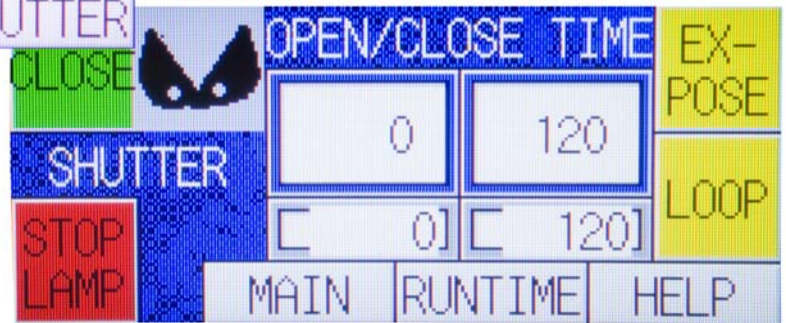
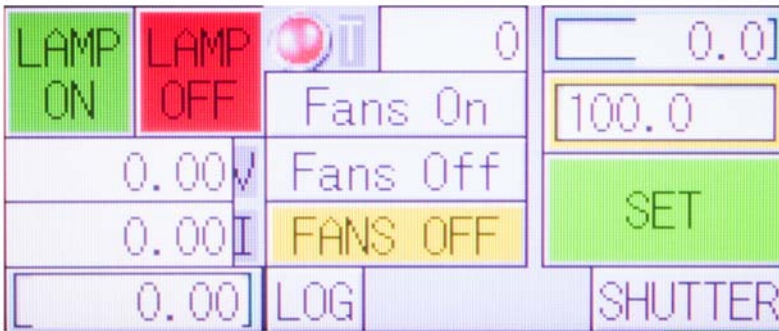
Temporal Instability is measured by taking 20 samples per second for 10 seconds.

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Control Unit and Software

Sciencetech's UHE-NS and UHE-NL solar simulators are controlled from a single touch screen interface control unit. Standard features of the control unit are:

- Touchscreen interface
- Shutter and exposure control (200ms closing/opening time)
- Lamp starts and timer log
- Forced air cooling safety interlock
- RS232 communication
- Power Control software with graphical user interface included,
- Single power line connection for lamp power, cooling, and communication



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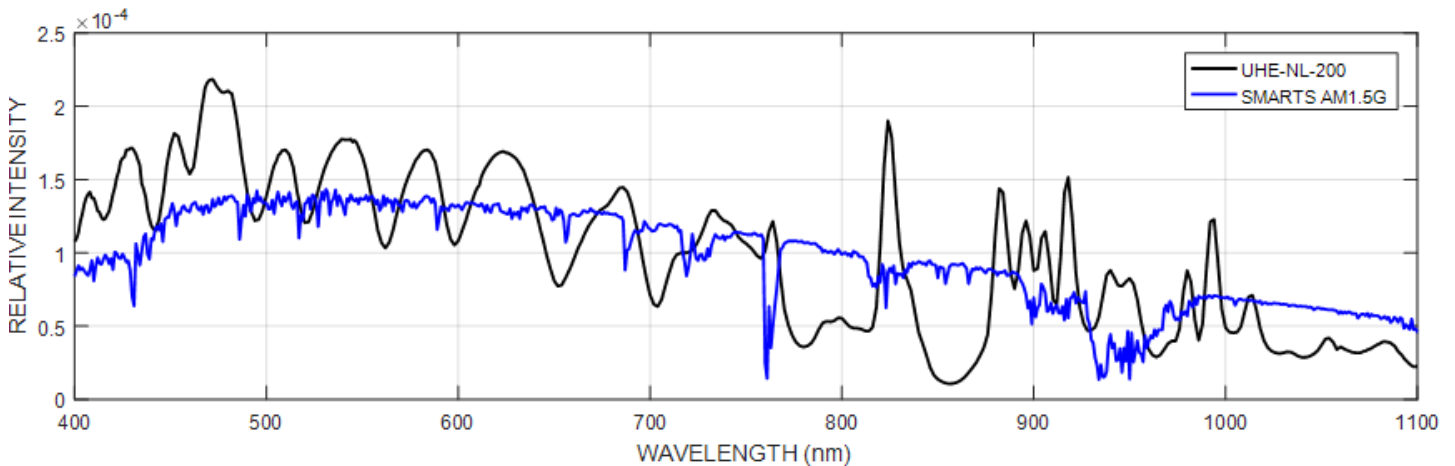
Filters

Sciencetech's UHE-NS/NL series solar simulators include a two-position filter holder. An add-on upgrade is available to increase the available filter positions to four.

The most popular options are AM filters; however, a range of other filter options are available.



UHE-NL with AM1.5G-FT-3 filter installed providing class A spectral match to the AM1.5G spectrum



Accessories (Optional)

Model	Part #	Description
AM1.5G-FT-3	160-8023	AM1.5G Standard range
AM-ALL-FT-2	640-8017	Provides AM15D, AM1.5G, and AM0 spectral match, and standard range
Custom Filters	-	Custom filters available upon request*
BandPass/ShortPass/	-	See the HPF brochure
Optical Liquid Filter	-	See the brochure

*Other filtering options include options for selectively filtering UV, VIS and IR portions of the spectrum. Please contact a Sciencetech sale representative for more information.

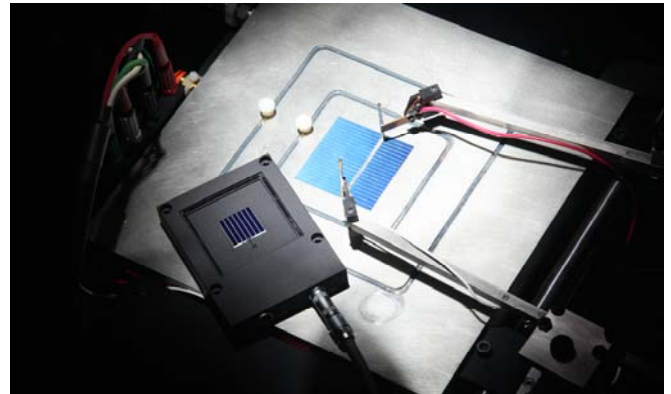
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Configuration Options

The UHE-NS/NL Simulators can be configured at the time of order. Various options have been designed to cover most requirements. Sciencetech prides itself on providing custom solutions. Please contact a Sciencetech sales engineer and let us know how we can help you!

Code	Part #	Description
-HB	N/A	Horizontal Beam Option (Please specify at time of order)
-AT100	166-8016	Automated Beam Attenuation from 0-100% in 10% Steps
FS-02-N	115-9027	Optical Feedback for Long Term Stability
UHE-DARK	116-8017	Light Tight Sample Area
ADJ-STAGE	166-8018	Manual Adjustable Stage, 250mm travel

Sciencetech offers a wide range of target plane accessories including fully featured cell chucks and IV testing software.

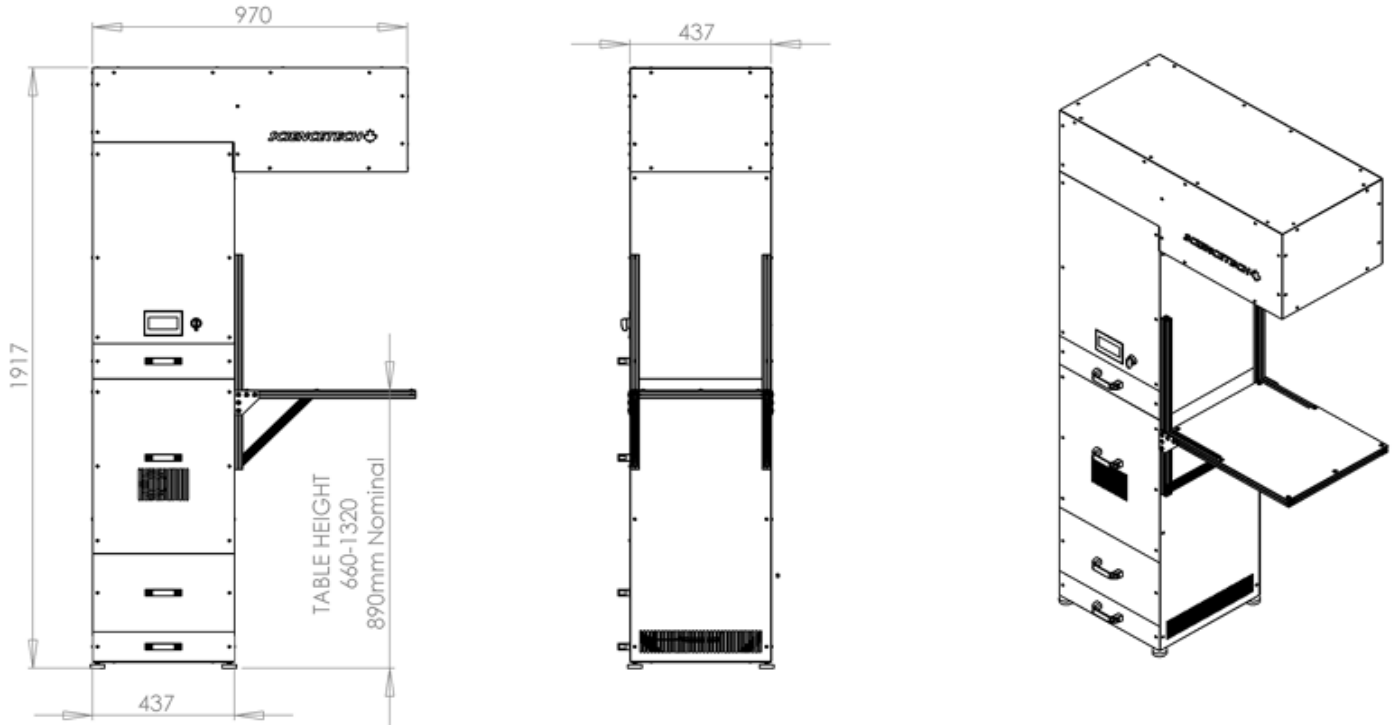


Cell Chuck Family	UHE-NS-75	UHE-NS-100	UHE-NL-150	UHE-NL-200	UHE-NL-250	UHE-NL-300
SCI-SCC3	Yes	-	-	-	-	-
SCI-SCC6	-	Yes	Yes	-	-	-
SCI-SCC12	-	-	-	Yes	Yes	Yes

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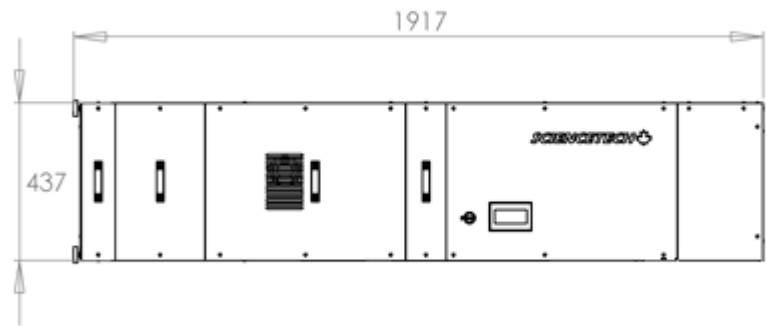
Dimensions

UHE-NL with Downward Facing Beam



Mounting Options

- 1/4-20 Levelling feet
- Optional 1" T-Slot (80/20) extrusion



UHE-NL Horizontal Beam Option