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SCIENCETECH
Making Light Work Better

Applications

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

Features

- Industry Leading Efficiency
- Class AAA
- Turn-key Operation
- Suitable for larger target areas
- Electronic shutter control
- Includes AM1.5G Filter
- Vertical with option for horizontal operation

UHE Solar Simulators

NS and NL-Series

MADE IN CANADA
FABRIQUÉ AU CANADA

Version 3.11 2026-07-07

UHE Solar Simulator Series

OVERVIEW

The UHE-NS and UHE-NL solar simulator series are class AAA and have a simple, user-friendly, turnkey system of operation. Due to their very high efficiency, these systems can be used for larger target areas and longer distances.

The UHE-NS/NL family of solar simulators are feature-rich, convenient, integrated systems suitable for a variety of research and testing applications requiring a stable and reliable uniform light source. UHE-NL series solar simulators can produce 1 Sun solar irradiance or more 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
SKU Number	166-9026	166-9027	166-9028	166-9029	166-9030	166-9031
Solar Simulator Type	Steady-State					
Test Plane Area. 1 Sun. AM1.5G (mm)	75 × 75	100 × 100	150 × 150	200 × 200	250 × 250	300 × 300
Test Plane Area. 1 Sun. AM0 (mm)[1]	60 × 60	80 × 80	125 × 125	165 × 165	205 × 205	250 × 250
Solar Simulator Classification	AAA					
Spectral Range (nm)	300-1800					
Spectral Match Classification	Class A. All intervals (0.75 < RSM* > 1.25). Different spectral filters available.					
Spatial non-uniformity of Irradiance Classification	< 2% A					
Temporal Instability of Irradiance Classification	A					
Collimation Half Angle (degrees)	<4.1				<5	
Working Distance (mm)[2]	270				575	585
Lamp Type	Xenon Short Arc					
Lamp Wattage (watts) | Model	300, (XE300)		1000, (XE1000-OS)		1600, (XE1600-OS)	
Irradiance Control[3]	0.8 - 1 sun					
Control Unit	Integrated Touchscreen Control Unit					
Dimensions (L × W × H) (mm)	See Dimensions Page					
Weight (kg)	80		95			
Power Supply Model	Integrated					
Power Requirements	100-240 V, 50/60 Hz, 6.3-2.7 A, Fused 6.25 A, 250 V		200-240 V, 50/60 Hz, 7.5-6.3 A, Fused 15 A, 250 V		200-240 V, 50/60 Hz, 12.1-9.0 A, Fused 15 A, 250 V	

[1] AM0 spectrum only achievable with the purchase of additional filters. Contact Sciencetech if you require an AM0 spectral match.

[2] This working distance is typical. The specific instrument's working distance will be supplied with the unit's test report after alignment. The working distance is not adjustable. Please contact us if you require a specific working distance.

[3] Irradiance control can be performed using control unit. Typically values above 1 sun can be reached.

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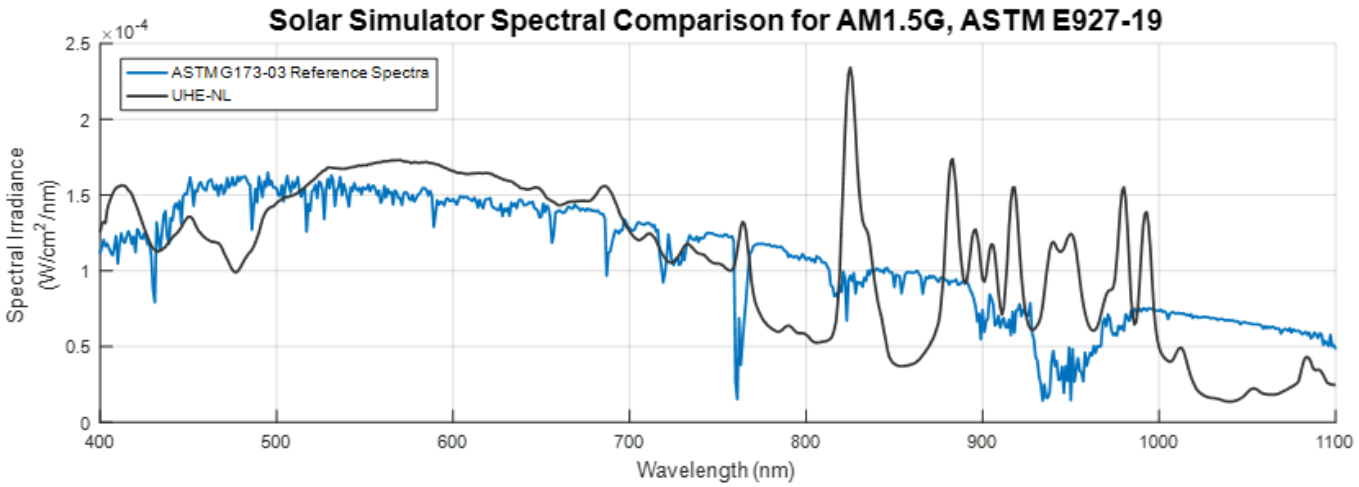
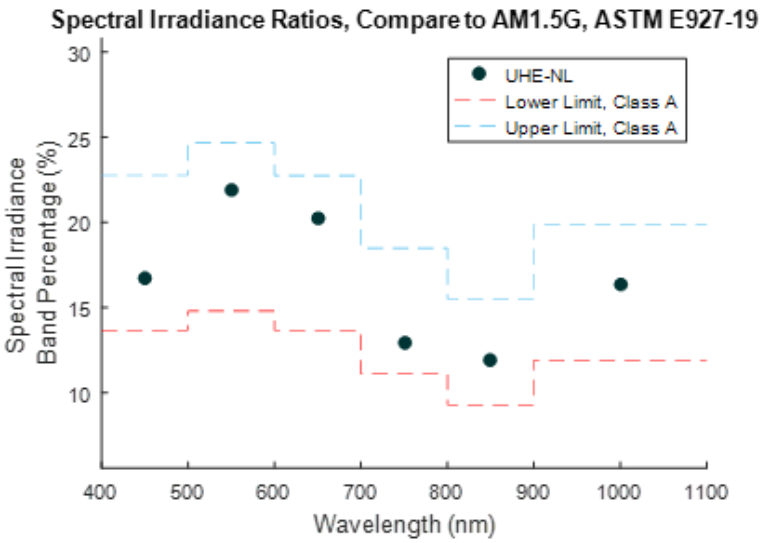
UHE Solar Simulator Series

CLASSIFICATION

Class A Spectral Match Performance

UHE solar simulators match Class A spectral match when used with the included compatible air mass filter (see below with an AM1.5G air mass filter). Non-uniformity, spectral match, temporal instability, and irradiance level are measured for each simulator. Testing is performed to meet ASTM E927-19 unless otherwise specified. All following testing results are for an example UHE and individual reports will vary.





Wavelength (nm)	Percentage	Class
400-500	16.74	A
500-600	21.86	A
600-700	20.19	A
700-800	12.95	A
800-900	11.93	A
900-1100	16.32	A
Overall Classification		A

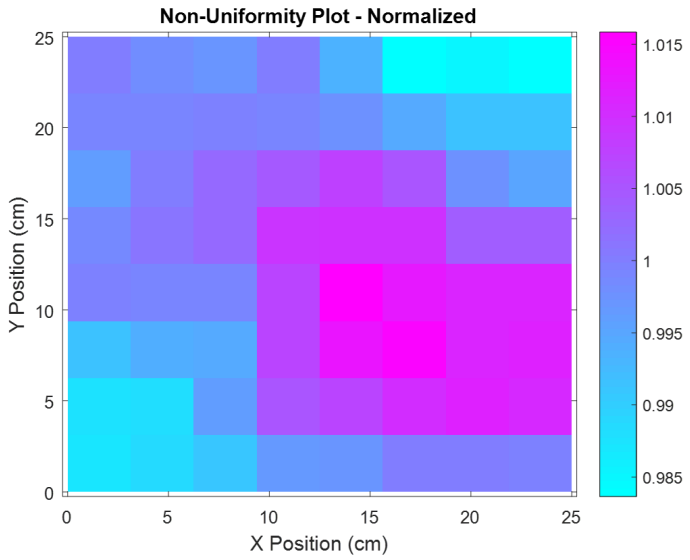
UHE Solar Simulator Series

CLASSIFICATION

Class A Spatial Non-Uniformity Performance

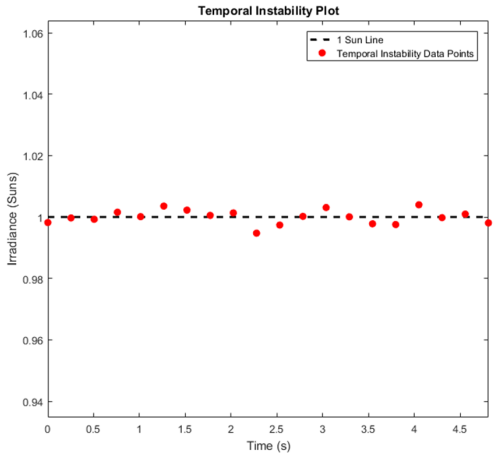
Both series are designed for either downward-facing or horizontal beam operation. In downward-facing beam orientation both the UHE-NS and UHE-NL produce uniform light slightly above standard desk height. This configuration allows for operation of the simulator from either a standing or seated position.

	Value	Units
Number of Measurement Points	64	-
Measurement Point Area	9.76	cm^2
Maximum Irradiance	1.0158	Suns
Minimum Irradiance	0.9836	Suns
Sample Standard Deviation of Spatial Non-Uniformity	0.008	Suns
Spatial Non-Uniformity of Irradiance	1.61	%
Classification	A	-



Non-Uniformity Map of a Class AAA UHE Solar Simulator.

Class A Temporal Instability Performance

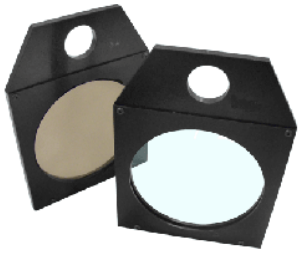


	Value	Units
Time Between Data Points	0.253	seconds
Number of Power Line Cycles (NPLC)	1	-
Total Measurement Points	20	-
Maximum Irradiance	1.004	Suns
Minimum Irradiance	0.9947	Suns
Temporal Instability of Irradiance	0.46	%

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.

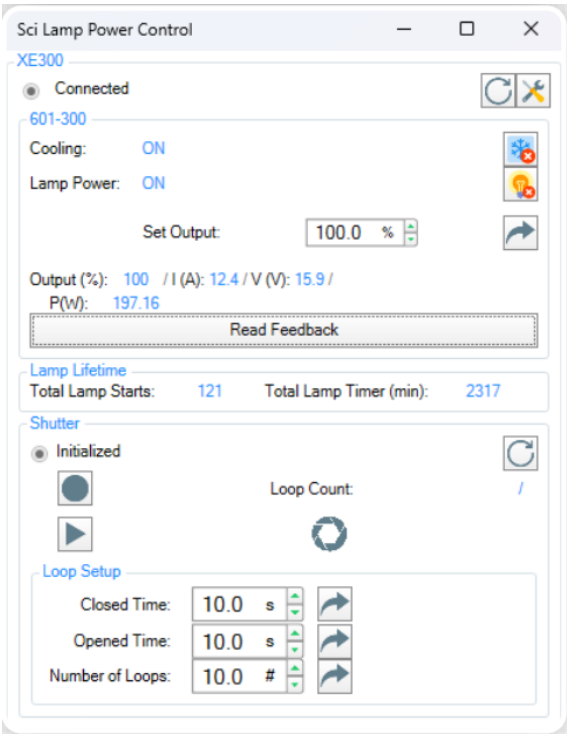


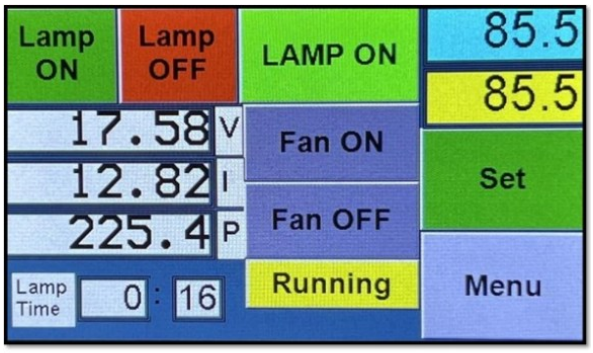
UHE Solar Simulator Series

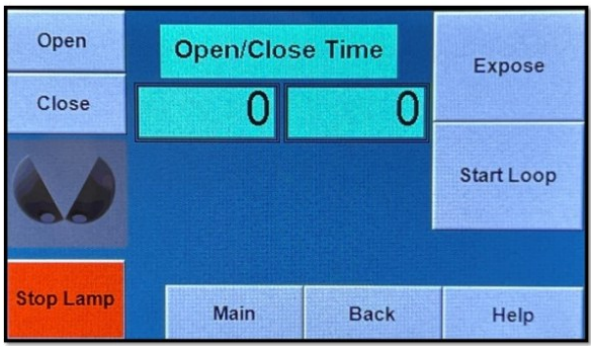
CONTROL UNIT & SOFTWARE

Sciencetech's UHE series includes integrated power supplies with a touchscreen interface.

- Touchscreen interface
- Shutter and exposure control
- Lamp starts and timer log
- Fan cooling safety interlock
- RS232 computer control software GUI







Optional Upgrades:

- Optical feedback
- Remote lamp status monitoring
- Auto lamp starting

UHE Solar Simulator Series

CONFIGURATION OPTIONS

Custom Configurations

The UHE-NS/NL solar 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 the Sciencetech sales team and let us know how we can help you!

Example "Concentrator" Configuration:

- 10 Suns
- AM1.5G
- 5 x 5 cm square target area
- Class AAA (ASTM E927-19)

Common Accessories

Code	Part #	Description
-HB	N/A	Horizontal Beam Option (Please specify at time of order).
AT-NL-MOT[1]	166-8016	Motorized attenuator designed for the UH-NL product line. Provides irradiance control from 10% to 100% of full output.
AT-NS-MOT[1]	166-8015	Motorized attenuator designed for the UH-NS product line. Provides irradiance control from 10% to 100% of full output.
AT-NL-MAN[1]	166-8032	Manual attenuator designed for the UHE-NL product line. Provides irradiance control for 10-100% attenuation.
AT-NS-MAN[1]	166-8033	Manual attenuator designed for the UHE-NS product line. Provides irradiance control for 10-100% attenuation.
LIS-UL	115-9033-C05	Optical feedback for long-term stability for UHE-NL product line.
LIS-US	115-9033-C04	Optical feedback for long-term stability for UHE-NS product line.
UHE-NS-DARK	166-8017	Light tight sample area for UHE-NS product line.
UHE-NL-DARK	CONTACT	Light tight sample area for UHE-NL product line.

[1] Class A spatial non-uniformity is not maintained throughout the attenuation range when using AT-NS/AT-NL attenuators.

Compatible Cell Chucks for Each Model

Cell Chuck Family	UHE-NS-075	UHE-NS-100	UHE-NL-150	UHE-NL-200	UHE-NL-250	UHE-NL-300
SCC-3 75 × 75 mm	✓	U	U	U	U	U
SCC-6 150 × 150 mm	✓	✓	✓	U	U	U
SCC-12 300 × 300 mm	×	×	✓	✓	✓	✓

✓ = Ideal , × = not compatible, U = chuck undersized, compatible

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UHE Solar Simulator Series

ACCESSORIES

HPF-LP-###-FT-3 (640-90##)

High power long pass filters. Various cut-on wavelengths available. Filters must be FT-3 format.

HPF-BB-###-FT-3 (640-90##)

High power band block filters. Various configurations available. Filters must be FT-3 format.

HPF-BP-###-FT-3 (640-90##)

High power bandpass filters. Various configurations available. Filters must be FT-3 – format.

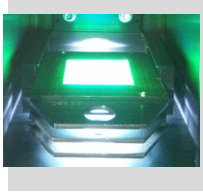
MF-FT-3 (640-9050)

Standard 75 mm (3") neutral density mesh filters. Made from stainless steel mesh

12, 20, 34, 40, 49, 55, 71, and 80% transmission options available.

Custom Filters (Custom)

Sciencetech has years of experience designing and sourcing custom filters. Contact us with your application and requirements now!



FH-SS-ADD (160-8044)

This option adds an additional 2 filter positions to the FH-SS filter holder. Designed to be used with Sciencetech FT-3 type filter holders.

MULTIMETER (125-9030)

The SCI-MO reference cell can be paired with a multi-meter to take fast measurement of solar simulator irradiance level.

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UHE Solar Simulator Series

ACCESSORIES

SCI-MO Reference Cell (125-9040)

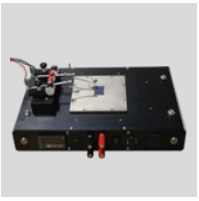
A robust, PCB-mounted solar cell with active area of 22x7mm, it is intended to be used as a reference monitors for determining solar simulator sun level. Sciencetech's most economical monitoring solution.

SSIVT-CT-030-1 (175-9120-C05)

30 W IV Tester for Continuous Solar Simulators (maximum voltage = 30 V, maximum current = 1 A). Other IV measurement options available.

SCP-4G (165-8214)

Probe Station, 4 Probes, Gold Spring Probes



SCC-3-TE (165-8202)

3.5" x 3.5" Solar Cell Chuck, TE Cooled, Computer controllable, Vacuum ready.

SCC-3-L-B (165-8221)

3.5" x 3.5" Solar Cell Chuck, Liquid Cooled, Rear Contact.

SOL-REF-Q (125-9060)

Calibrated Reference Cell, Quartz Window, options available for Sciencetech calibration or NIST/NREL-traceable calibration. 20×20mm monocrystalline silicon device. Includes RTD and IV connections.

SOL-METER (125-9011)

Solar Power Meter, a digital meter for use with solar calibrated detectors (e,g. SOL-REF-Q and SSIVT-REF).

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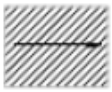
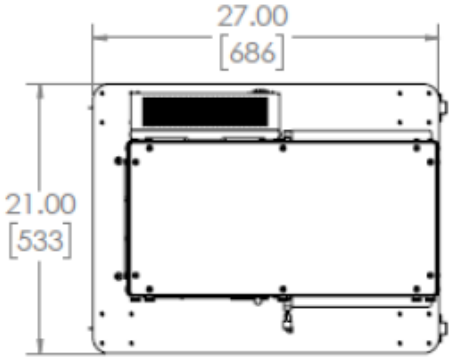
UHE Solar Simulator Series

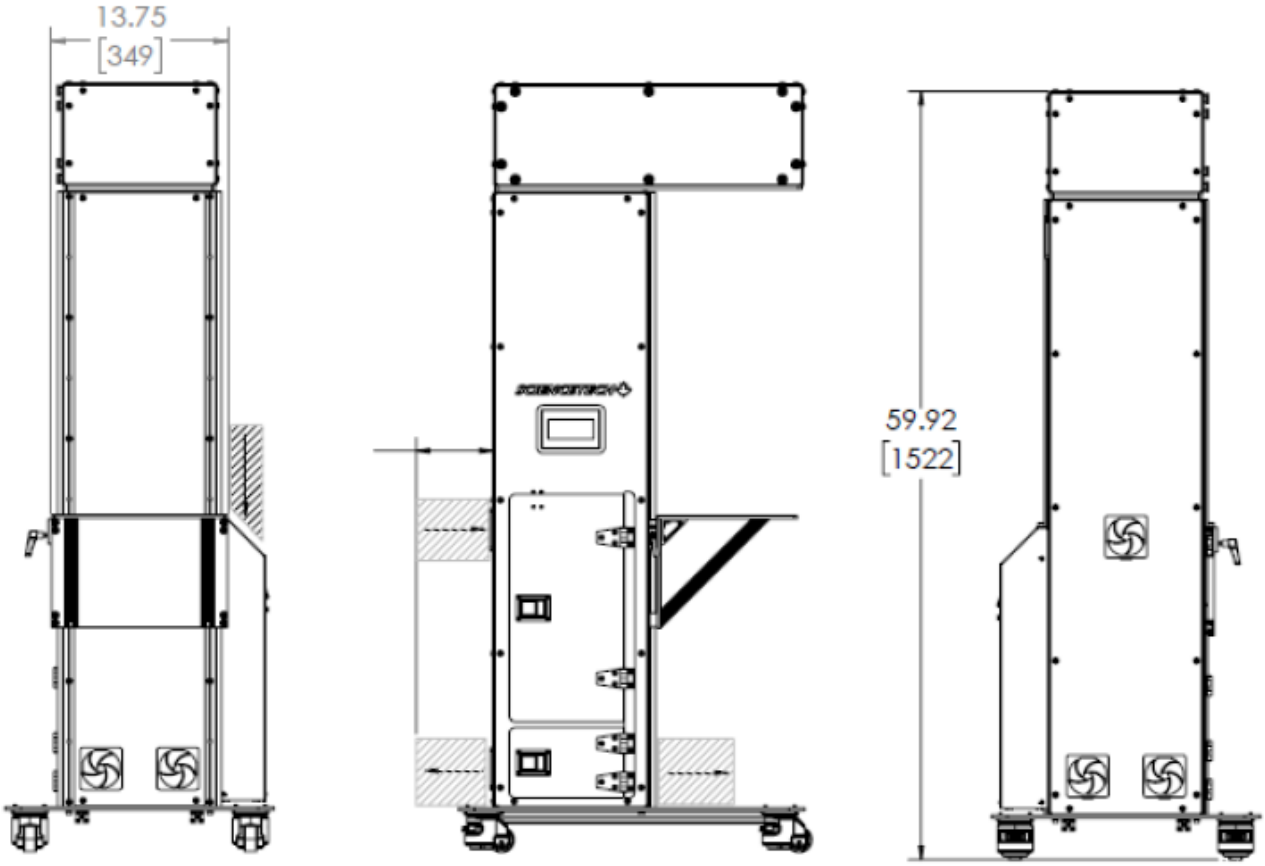
DIMENSIONS

UHE-NS with Downward Facing Beam. Dimensions are in inches [mm].



INDICATES AIRFLOW CLEARANCE AND DIRECTION





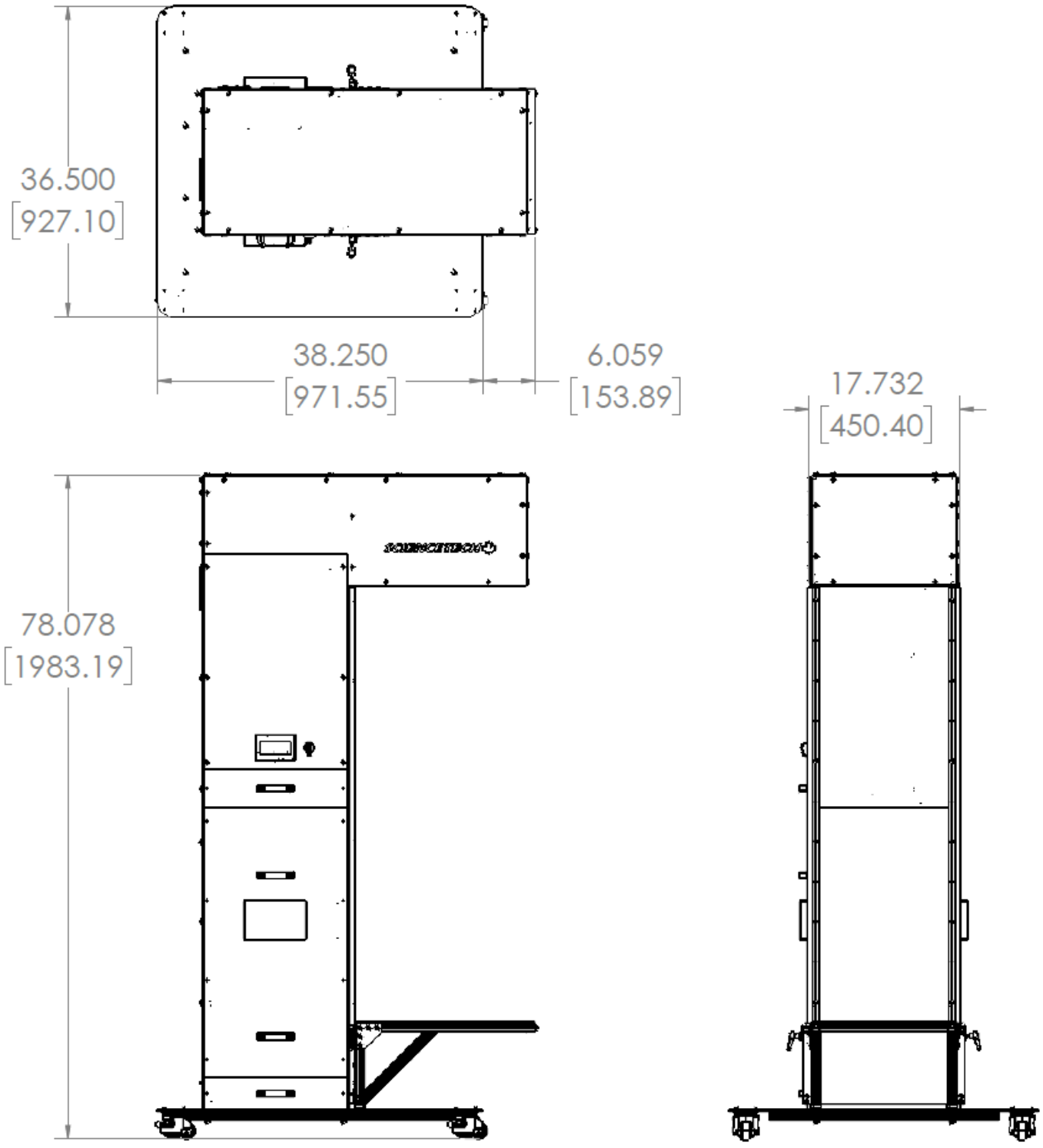
Mounting Options

- 1/4-20 Levelling feet provided standard
- Optional hold down brackets available

UHE Solar Simulator Series

DIMENSIONS

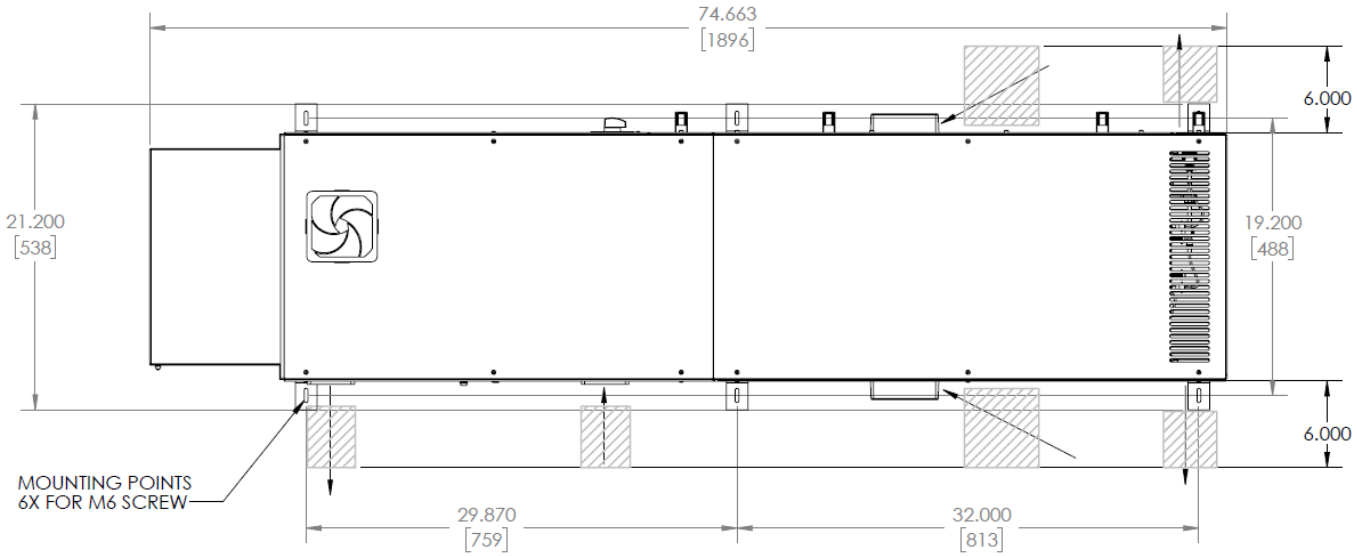
UHE-NL with downward-facing beam. Units are in inches [mm].

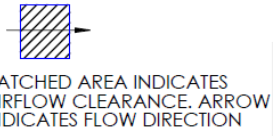


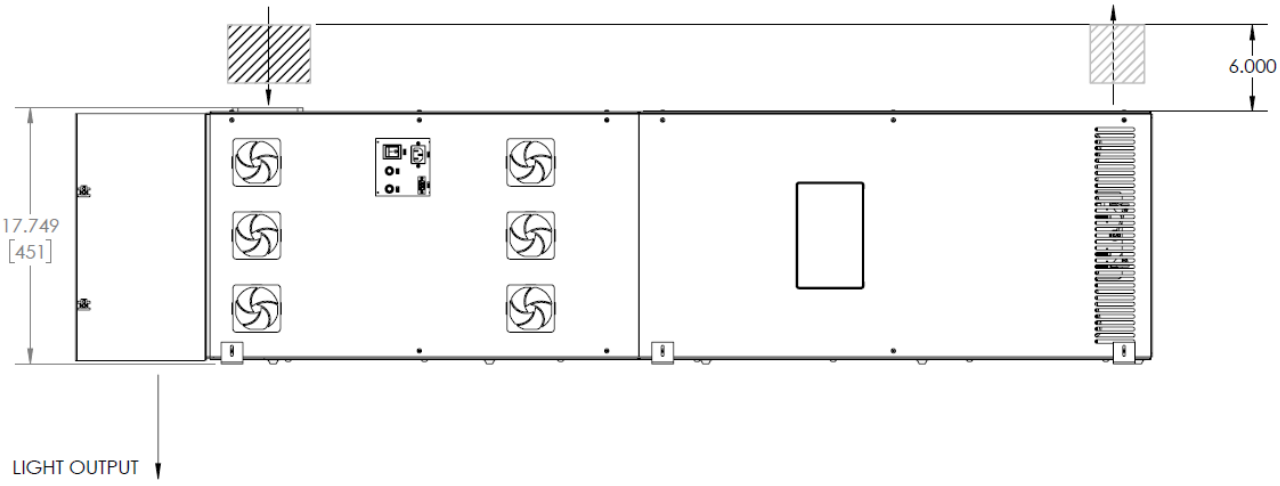
UHE Solar Simulator Series

DIMENSIONS

UHE-NL with horizontal-facing beam. Units are in inches [mm].







UHE Solar Simulator Series

ORDERING INFORMATION

Model	Part Number	Description
UHE-NS-075	166-9026	UHE-NS-style AM1.5G solar simulator, target size 75 × 75 mm
UHE-NS-100	166-9027	UHE-NS-style AM1.5G solar simulator, target size 100 × 100 mm
UHE-NL-150	166-9028	UHE-NL-style AM1.5G solar simulator, target size 150 × 150 mm
UHE-NL-200	166-9029	UHE-NL-style AM1.5G solar simulator, target size 200 × 200 mm
UHE-NL-250	166-9030	UHE-NL-style AM1.5G solar simulator, target size 250 × 250 mm
UHE-NL-300	166-9031	UHE-NL-style AM1.5G solar simulator, target size 300 × 300 mm
HPF-LP-###-FT-3	(640-90##)	High power long pass filters. Various cut-on wavelengths available. Filters must be FT-3 format.
HPF-BB-###-FT-3	(640-90##)	High power band block filters. Various configurations available. Filters must be FT-3 format.
HPF-BP-###-FT-3	(640-90##)	High power bandpass filters. Various configurations available. Filters must be FT-3– format.
MF-FT-3	(640-9050)	Standard 75 mm (3") neutral density mesh filters. Made from stainless steel mesh. 12, 20, 34, 40, 49, 55, 71, and 80% transmission options available.
FH-SS-ADD	(160-8044)	This option adds an additional 2 filter positions to the FH-SS filter holder. Designed to be used with Sciencetech FT-3 type filter holders.
MULTIMETER	(125-9030)	This option adds an additional 2 filter positions to the FH-SS filter holder. Designed to be used with Sciencetech FT-3 type filter holders.
SCI-MO	(125-9040)	A robust, PCB-mounted solar cell with active area of 22 × 7 mm, it is intended to be used as a reference monitors for determining solar simulator sun level. Sciencetech's most economical monitoring solution.
SSIVT-CT-030-1	(175-9120-C05)	30 W IV Tester for continuous solar simulators (maximum voltage = 30 V, maximum current = 1 A). Other IV measurement options available.
SCP-4G	(165-8214)	Probe station, 4 probes, gold spring probes.
SCC-3-TE	(165-8221)	3.5" x 3.5" Solar cell chuck, liquid cooled, rear contact.
SCC-3-L-B	(165-8221)	3.5" x 3.5" Solar cell chuck, liquid cooled, rear contact.
SOL-REF-Q	(125-9060)	Calibrated Reference Cell, Quartz Window, 20 × 20 mm monocrystalline silicon device.
SOL-METER	(125-9011)	Solar Power Meter, a digital meter for use with solar calibrated detectors (e,g. SOL-REF-Q and SSIVT-REF).
-HB	N/A	Horizontal beam option (Please specify at time of order)
AT-NL-MOT	166-8016	Motorized attenuator designed for the UH-NL product line. Irradiance control from 10-100% of full output.
AT-NS-MOT	166-8015	Motorized attenuator designed for the UH-NS product line. Irradiance control from 10-100% of full output.
AT-NL-MAN	166-8032	Manual attenuator designed for the UHE-NL product line. Irradiance control for 10-100% attenuation. [1]
AT-NS-MAN	166-8033	Manual attenuator designed for the UHE-NS product line. Irradiance control for 10-100% attenuation. [1]
LIS-UL	115-9033-C05	Optical feedback for long-term stability for UHE-NL product line.
LIS-US	115-9032-C04	Optical feedback for long-term stability for UHE-NS product line.
UHE-NS-DARK	166-8017	Light-tight sample area for UHE-NS product line.
UHE-NL-DARK	CONTACT	Light-tight sample area for UHE-NL product line.