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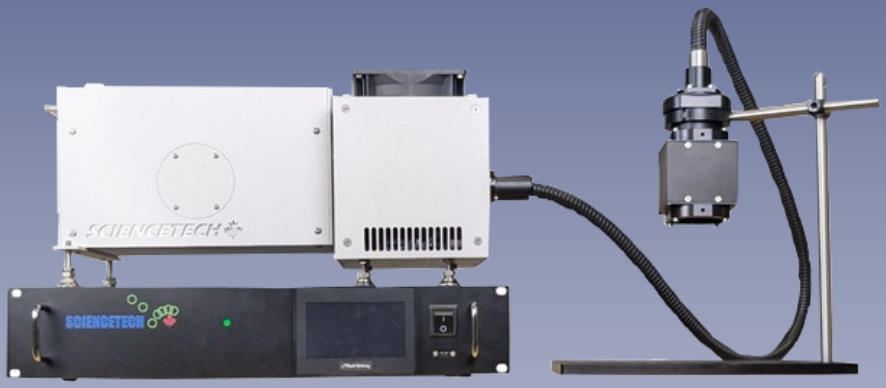
SCIENCETECH
Making Light Work Better



Applications

- Testing photovoltaic cell performance
- Photochemistry
- Photobiology
- Photocatalytic research
- Photosynthesis
- Environmental durability testing

Features

- Class AAA ASTM standard
- Fiberized output for flexible illumination
- Easy-to-use touchscreen controls
- Light intensity control available
- Up to 18 Suns intensity
- Remote control by PC
- Cost-effective for researchers
- CE Compliant
- Spectral range 350-1800 nm
- Easy glovebox integration

MADE IN CANADA
FABRIQUÉ AU CANADA

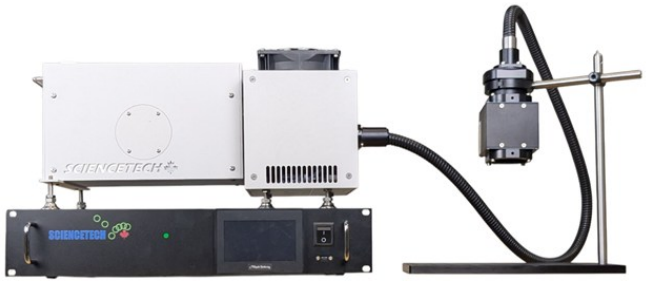
LightLine Fiberized Solar Simulators & Light Sources

Version 5.8 2026-06-15

LightLine Fiberized Solar Simulators

OVERVIEW & SPECIFICATIONS

The Sciencetech LightLine series of fiberized solar simulators are a revolution in the solar simulator industry. With the Lightline, you can direct the Class AAA solar light anywhere you wish with the standard 4 foot fiber. Classic designs for solar simulators require you to bring your sample to the solar simulator. Now you can bring the solar simulator to your sample. The LightLine solar simulators come standard with a touchscreen power supply, integrated shutter, and exposure controller.



The LightLine has one base model and three output optics configurations (custom output optic configurations are available). Configuration options exist for Class AAA illumination up to 50 mm square or intensity up to 18 Suns.

A number of air mass filters are available. In addition to spectral matching filters, you can also add intensity filters and other spectral filters like UV and IR blocking filters. Variable or manual attenuator can be added at the time of order , or a 6-position filter wheel. These accessories occupy the same space, so either a filter wheel or attenuator may be added, not both.

Please see the accessories page for a full list of optional accessories.

Specifications

MODEL	AX-100	AX-200	AX-400
Target Area	10 × 10 mm	25 × 25 mm	50 × 50 mm
Sun Level	18 Suns	4 Suns	1 Sun
Spectral March	A		
Spatial Non-Uniformity	A		
Temporal Instability	A		
Wavelength Range	350 - 1800 nm		
Working Distance[1]	90 - 110 mm	190 - 210 mm	390 - 410 mm
Air Mass Filters	AM1.5G, AM1.5D[2]		
Lamp	300 W Xenon, 900 h (average) Lifetime, Forced Air Cooling		
Shutter	Integrated Touchscreen Control, 0 - 10000s, Adjustable Duty Cycle		
Fiber Bundle Length	1.22m (4') Standard		
Power Supply Model	PS-XE300-A-T		
Input Voltage/Current	100-240 VAC, 6 A - 3 A		
Environment	Temperature 10-35°C , Humidity 20-80% , Non-condensing		
Dimension (L × W× H)	See Dimensions Page		
Weight	15 kg		

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

[2] AM1.5D spectral requirements are also met by the AM1.5G filter. A single filter is supplied if both matches are requested.

Standard Included Components

- Air mass filter
- Arc Lamp Housing with integrated igniter
- Xenon arc lamp
- Filter holder
- Quality control report
- Power supply
- Power supply control software (touchscreen
- Motorized shutter

STANDARDS

LightLine Solar Simulators are designed to meet the following standards:

ASTM E927-19 | IEC-60904-9-Ed.3

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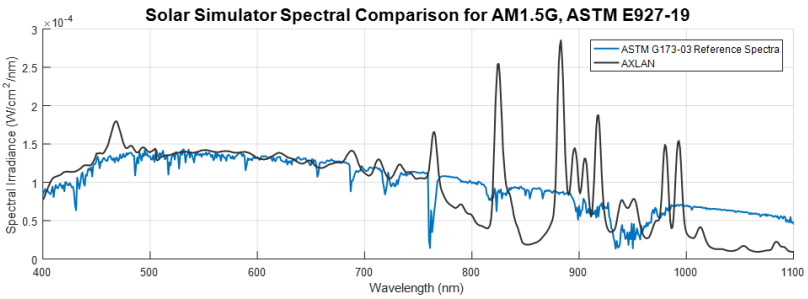
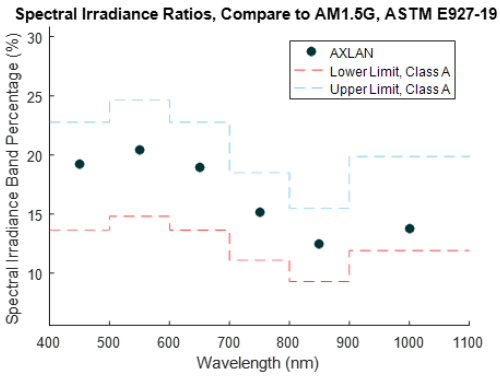
LightLine Fiberized Solar Simulators

AAA CLASSIFICATION

Class A Spectral Match Testing Report

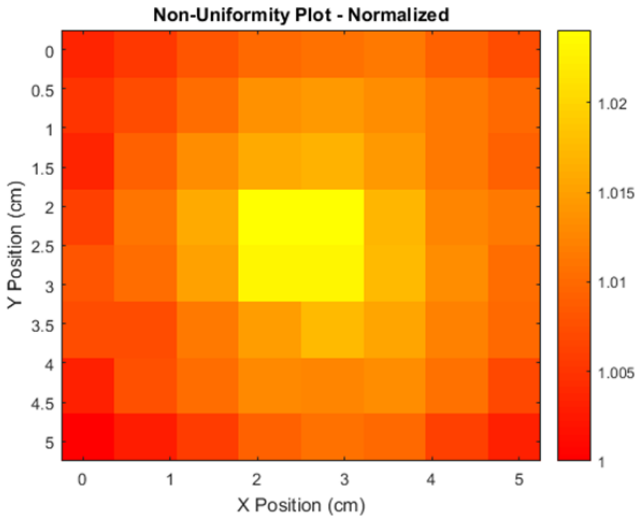
The spectral measurement was performed with a stepping-monochromator and silicon photodiode detector using modulated light and sensitive lock-in amplifier, in accordance to ASTM E927-19 standards. All testing results shown are for an example LightLine and individual reports will vary.





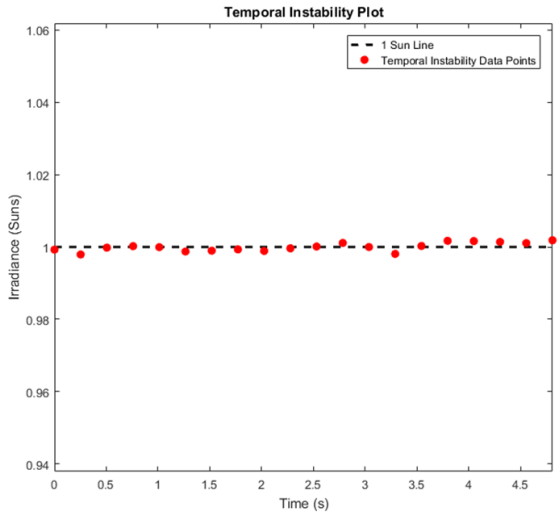
Class A Spatial Non-uniformity

Spatial non-uniformity was measured in accordance to ASTM E927-19 standards at an intensity of 1 sun or higher as specified. Validation performed measuring the short-circuit current of a silicon cell.



Class A Temporal Instability

Temporal instability of irradiance was measured in accordance to ASTM E927-19 standards at an intensity of 1 sun. Validation performed measuring the short-circuit current of a silicon cell.



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LightLine Fiberized Solar Simulators

CONFIGURATION OPTIONS

Motorized 6-position Filter Wheel

Select a motorized 6-position filter wheel compatible with 1" diameter filters. Filters need to be added separately. Only a attenuator or filter wheel can be selected, not both.

Target Size and Irradiance

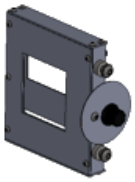
The first selection is target size and maximum irradiance. These two specifications are directly linked. All options are Class AAA.

Options:

- 10 x 10 mm and 18 Suns
- 25 x 25 mm and 4 Suns
- 50 x 50 mm and 1 Sun

Variable Attenuator

Controls the output irradiance level without adjusting the power supply. The range of attenuation is continuously variable from 10% to 100%. Motorized attenuators require PS-XE300A-T series power supplies.



Options:

- None
- Motorized
- Manual

The LightLine preserves its uniformity well with attenuation.

The VAR-ATTN-LL-A attenuator option maintains Class A non-uniformity below 10% transmission.

Transmission (%)	Non Uniformity (%)
100.0	±1.2
100.0	±1.2
100.0	±1.3
88.6	±1.3
67.4	±1.4
36.4	±1.4
22.7	±1.4
7.6	±1.5
5.3	±1.5
1.5	±2.2

Spectral Filter

Select an AM1.5G filter or none if you wish to use a different or specialized filter.

Options:

- AM1.5G
- None

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LightLine Fiberized Solar Simulators

POWER SUPPLY & SOFTWARE

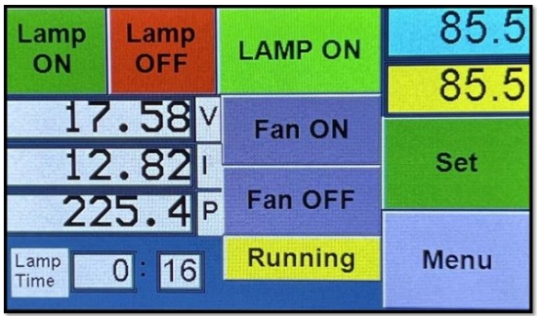
Power Supply and Software

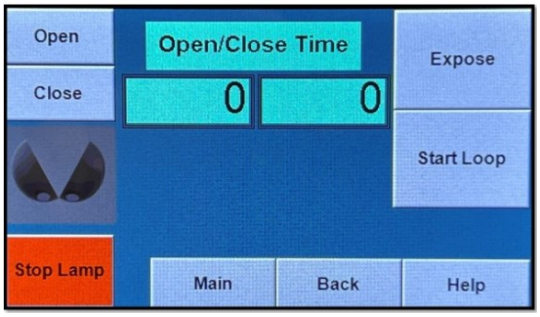
Each LightLine solar simulator comes with a PS-XE300-A-T power supply, allowing remote PC control.

PS-XE300-A-T power supply

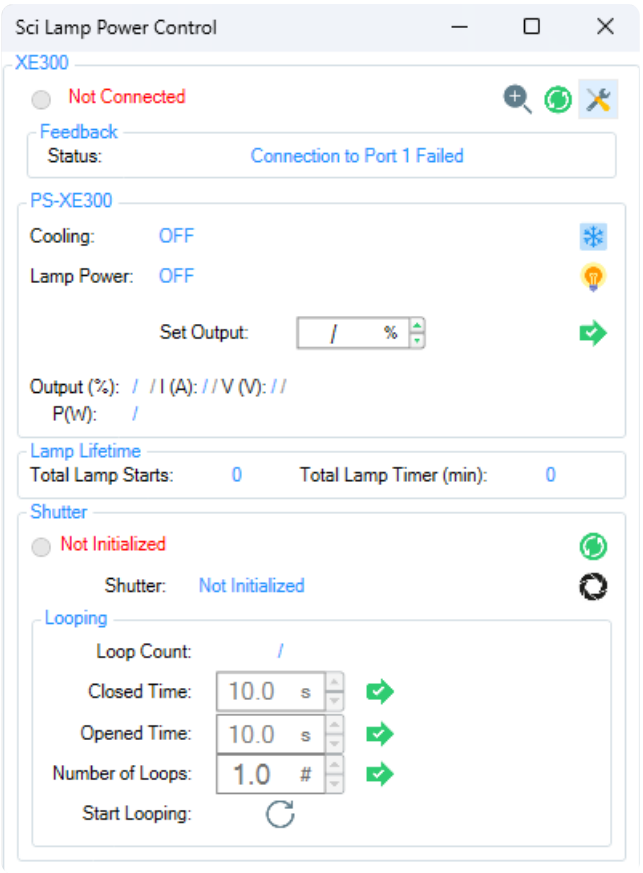
Standard features included with Sciencetech's PS-XE300-A-T power supplies:

- Touchscreen interface
- Shutter and exposure control
- Single connection for lamp power, cooling, and communication
- Lamp starts and timer log
- Fan cooling safety interlock
- RS232 software GUI included





Software GUI for Computer Control



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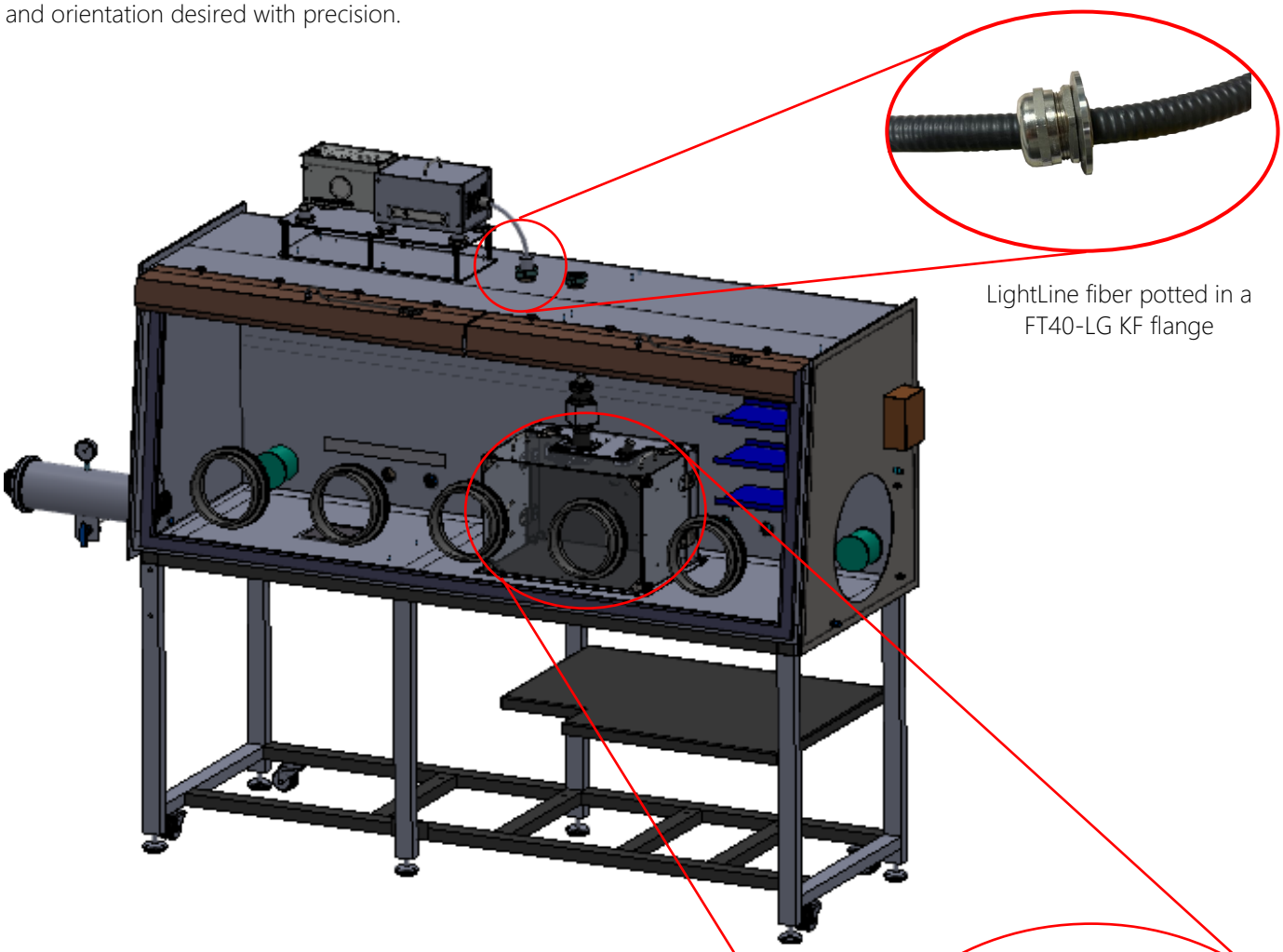
LightLine Fiberized Solar Simulators

GLOVE BOX INTEGRATION

The LightLine solar simulator can be easily integrated into a glovebox to provide solar illumination without the losses associated with passing the beam through a window.

The fiber can be potted into a flange for an effective seal, and the light can be easily directed into the location and orientation desired with precision.



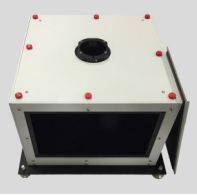
LightLine fiber potted in a FT40-LG KF flange

LightLine with fiber potted in a FT40-LG KF flange, coupled to SC-MOD sample chamber (shown here inside glovebox).

SC-MOD sample chamber

LightLine Fiberized Solar Simulators

ACCESSORIES



SC-12 (130-9011)

A general-purpose sample chamber that can be configured in multiple ways to address a number of application requirements. The SC-12 includes 4 optical ports as well as a side door for easy access to the sample area.

SC-MOD (130-9020)

A modular sample chamber suitable for integration with the LightLine and many other Sciencetech products. Numerous options available for passthroughs and couplings.

PM90 (100-8060)

A stand/fiber holder designed to hold the LightLine optical illumination delivery fiber. Fiber holder position is adjustable for vertical and horizontal illumination.

OPTICAL FIBER FB-0.5-8

Up to a 15-foot optical fiber upgrade to allow for further versatility with the LightLine. Please note that there will be a reduction in the power output with longer fiber.

SOL-METER (125-9011)

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

SCI-MO (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.

SOL-REF-Q (125-9060)

Calibrated Reference Cell, Quartz Window, options available for traceability to NIST and NREL.

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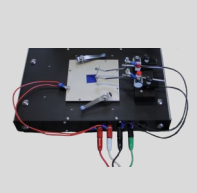
LightLine Fiberized Solar Simulators

ACCESSORIES

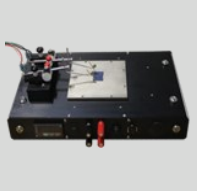
SSIVT-C (175-9120)

IV Tester for Continuous Solar Simulators.



SCC-3 (165-8315)

3.5″ x 3.5″ Solar Cell Chuck, Uncooled, Vacuum-Ready.



SCC-3-TE (165-8310)

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

FILTERS

Numerous filtering options are available with the Sciencetech LightLine. The standard LightLine comes with two filter slots.

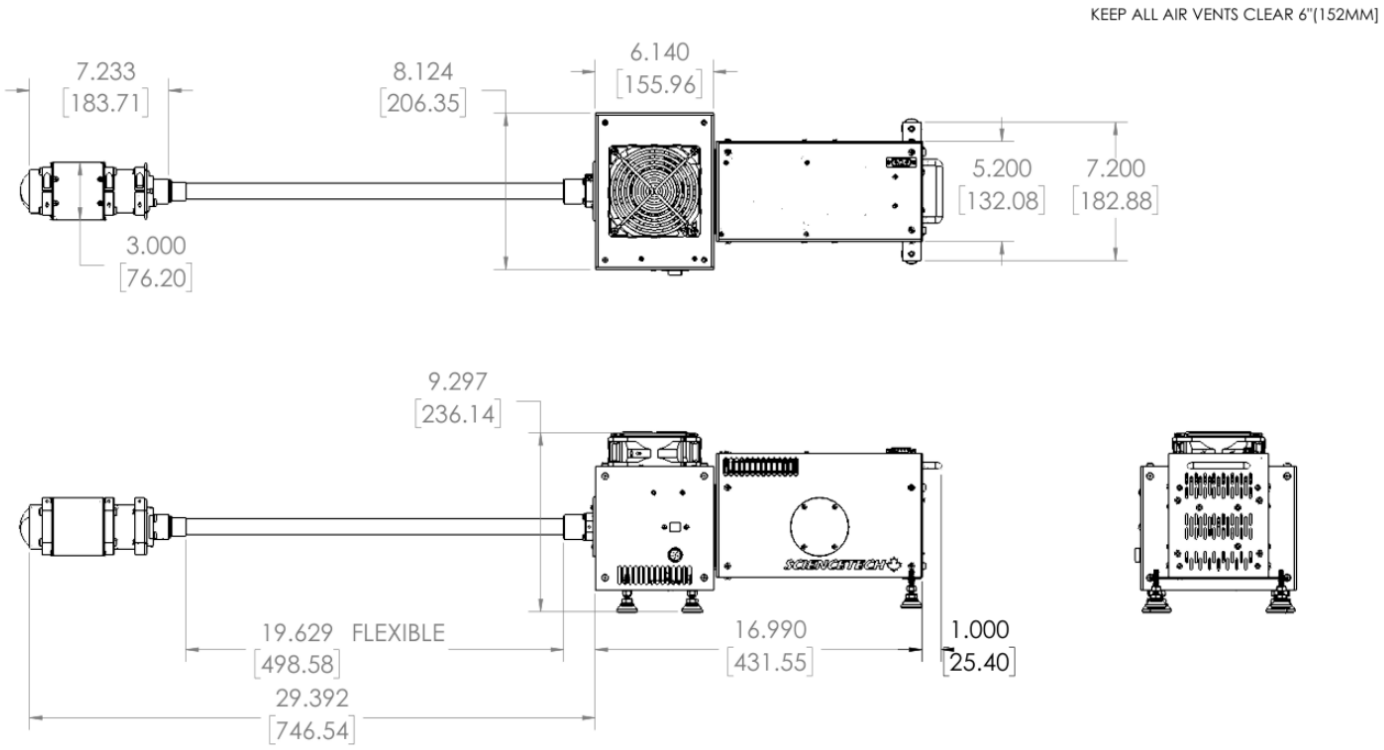
LIS (115-9033)

The light intensity stabilizer is meant to stabilize the light output on a time scale of hours or days, useful for longer-running experiments.

LightLine Fiberized Solar Simulators

DIMENSIONS

Dimensions are in [mm] and inches.



Please note: Due to our continuous improvement system, all specifications are subject to change without notice. LightLine solar simulator specifications listed are according to ASTM E927-19.

LightLine Fiberized Solar Simulators

ORDERING INFORMATION

Model	Part Number	Description
		Packages
AX-LL	161-9100	LightLine Fiberized Solar Simulator
		Accessories
SC-12	101-8024	General-Purpose Light-Tight Sample Chamber
SC-MOD	130-9020	Modular Light-Tight Sample Chamber
PM90	100-8060	Stand/Fiber Holder
Optical Fiber Bundle	Custom	Contact us for a custom length optical fiber bundle
SOL-METER	125-9011	Calibrated Sun Meter
SCI-MO	125-9040	Monitor Detector Assembly
SOL-REF-Q	125-9060	Calibrated Reference Cell, Sciencetech or external lab calibration options
SSIVT-C	175-9120	Current-Voltage Measurement System (IV Tester) for Continuous Solar
SCC-3	165-8315	Solar Cell Chuck, Uncooled, Vacuum-ready, 9 cm × 9 cm (3.5" × 3.5")
SCC-3-TE	165-8310	Solar Cell Chuck, TE-cooled, Vacuum-ready, 9 cm × 9 cm (3.5" × 3.5")
Custom Filters	Custom	Custom filters—please inquire.
LIS	115-9033	Light Intensity Stabilizer