www.sciencetech-inc.com sales@sciencetech-inc.com +1 (519) 644 0135

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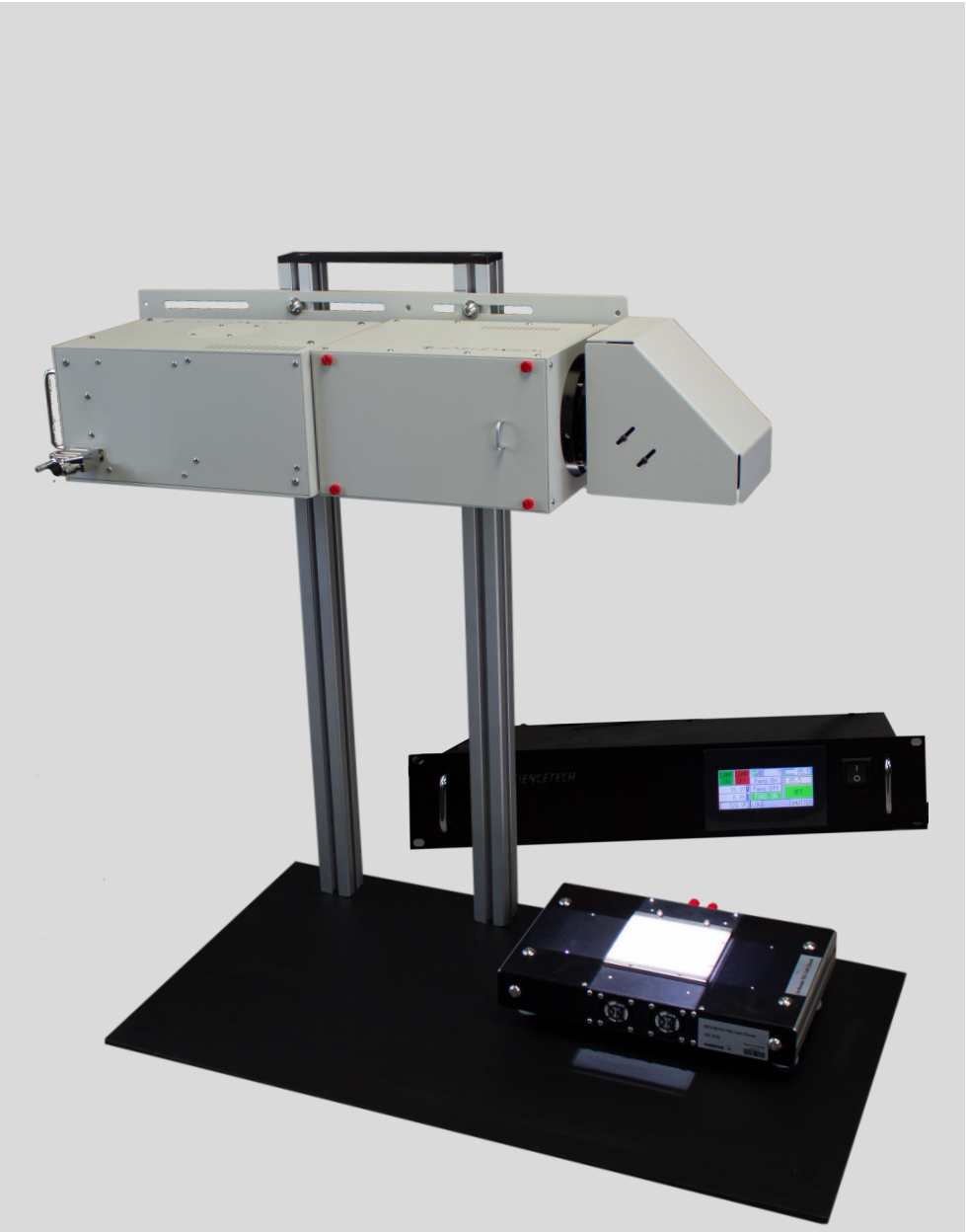
Making Light Work Better



## Applications

- Photovoltaic Testing
- Environmental Testing
- Photobiology
- Photochemistry
- Material and degradation testing

## Features

- Class AAA specification (ASTM, IEC)
- Illumination area: 50x50mm
- Touchscreen power supply with control software included
- Manual shutter included (electronic shutter available)
- Variable attenuator from 0.1–2 suns
- Plug and play operation
- Long working distance can facilitate glovebox integration
- CE Compliant

MADE IN CANADA
FABRIQUÉ AU CANADA

# Small Area Solar Simulators

# SciSun Series

Version 3.5 March 2021

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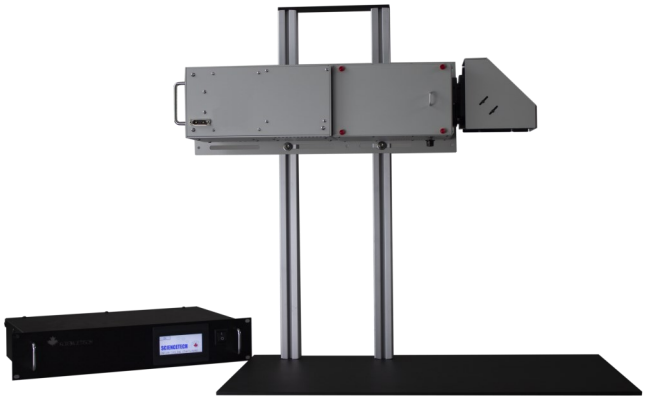
# SciSun Solar Simulators

# OVERVIEW & SPECIFICATIONS

Sciencetech's line of SciSun solar simulators are easy to use, economically priced, and technically superior. The SciSun line is designed for researchers who do not require a large field of illumination. They can produce up to **2 Suns** and feature Class AAA specifications.

The SciSun series provides a flexible output orientation that can be adapted to different requirements. The standard configuration is downward-facing; however, a horizontal output can be achieved easily.



## Specifications

| Model | SciSun-300<br>160-9101 | SciSun-150<br>160-9103 |
|---|---|---|
| Target Area | 50 × 50 mm | |
| Solar Simulator Class | AAA (Spacial non-Uniformity[1], Spectral Match[2], Temporal Instability[3]) | |
| Irradiance at Target (AM1.5G 1 Sun=100mW/cm2) | Up to 2 Sun[2] | Up to 1 Sun[2] |
| Lamp Wattage (watts) | 300 | 150 |
| Lamp Type | Xenon Short Arc , Ozone free | |
| Working Distance (mm) | 380 ± 15 | |
| Manual Shutter | Included | |
| Manual Variable Attenuator | Included | Included |
| Dimensions (L×W×H) | 535 × 183 × 188 mm | |
| Weight without PS (kg) | 8.5 + 8 (stand) | 8.5 + 8 (stand) |
| Power Supply Model | 601-300 | 601-150 |
| Power Requirements | 110-240V, 50Hz/60Hz , 450W | 110-240V, 50Hz/60Hz , 250W |
| Stability / Ripple / Regulation | 0.05% / < 1% / 0.02% current variation for 5V line charge | |

| Configuration | Standard Model |
|---|---|
| Arc Lamp Housing with integrated igniter | ● |
| Xenon arc lamp | ● |
| Filter holder | ● |
| Beam turner | ● |
| Continuous beam angle variations from 0-360 degrees | ● |
| Quality Control Report | ● |
| Touchscreen power supply interface | ● |
| Power supply control software | ● |
| Manual variable attenuator | ● |
| Height adjustable stand | ● |

### STANDARDS

SciSun Solar Simulator is designed to meet the following standards:

ASTM E927-19 | IEC-60904-9 | JIS C8904-9 (2017)

1) Determined from true Isc measurements with silicon sensor mounted on 2 axis automated stage. 2) Measured using NIST traceable secondary reference cell. 3) Measured with scanning spectroradiometer calibrated as per ASTM G138-06. 4) Determined from 20 measurements spaced at 250ms, NPLC=1. Due to our continuous improvement system, all specifications are subject to change without notice.

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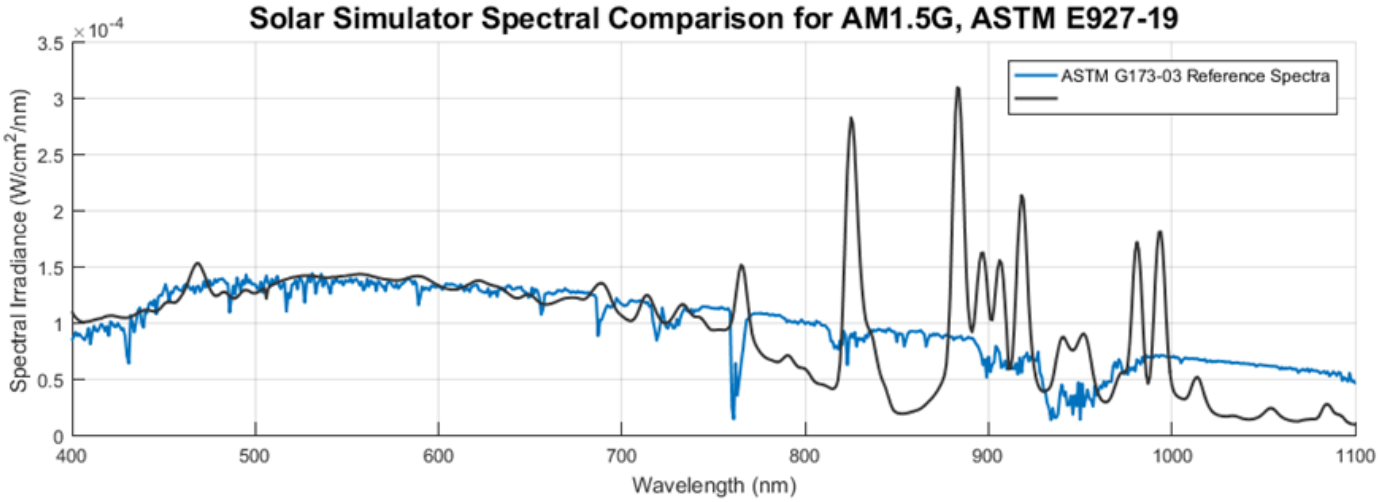
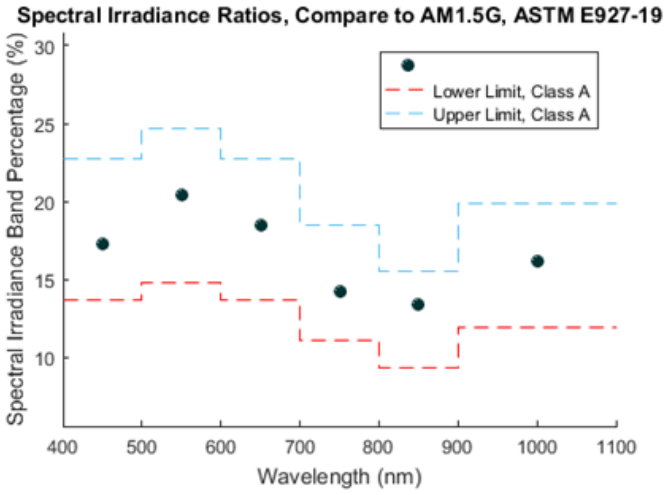
# SciSun Solar Simulators

# CLASSIFICATION AAA

## Class A Spectral Match

SciSun solar simulators match Class A spectral match when used with a compatible air mass filter (sold separately; see below using an AM1.5G filter). All testing results are for an example SciSun-300 and individual reports will vary




| Wavelength | Percentage | Class |
|---|---|---|
| '400-500' | '17.2821' | 'A' |
| '500-600' | '20.4084' | 'A' |
| '600-700' | '18.5142' | 'A' |
| '700-800' | '14.2414' | 'A' |
| '800-900' | '13.4281' | 'A' |
| '900-1100' | '16.1258' | 'A' |

## Solar Simulator Standards

SciSun solar simulator specifications listed are according to ASTM E927-19 and IEC-60904-9 unless otherwise stated. We can accommodate testing to match several standards. Testing procedure as per ASTM E927-19 provided by default. Please specify upon ordering if testing against IEC-60904-9 is required.

# SciSun Solar Simulators

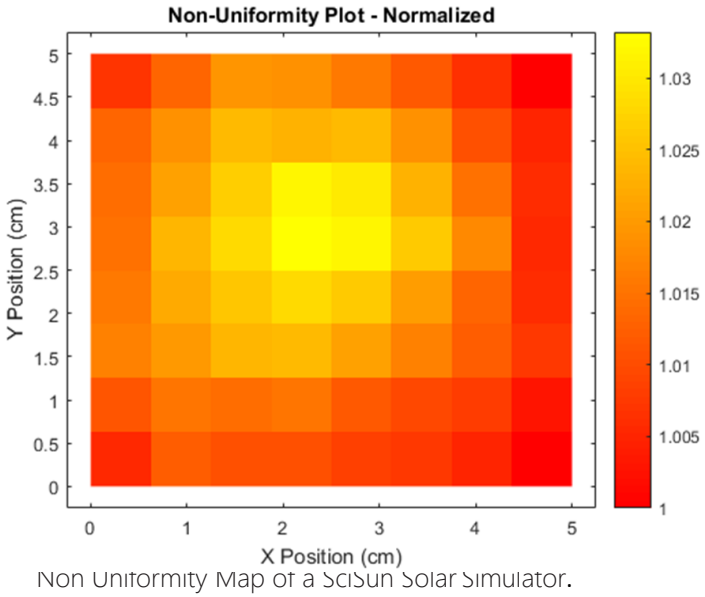
# CLASSIFICATION AAA

## Class A spatial non-uniformity (NU):

SciSun solar simulators meet Class A spatial non-uniformity by default (see below).

Non-uniformity = 1.6% Less than 2%.

Class B may also be available over larger target sizes upon request.

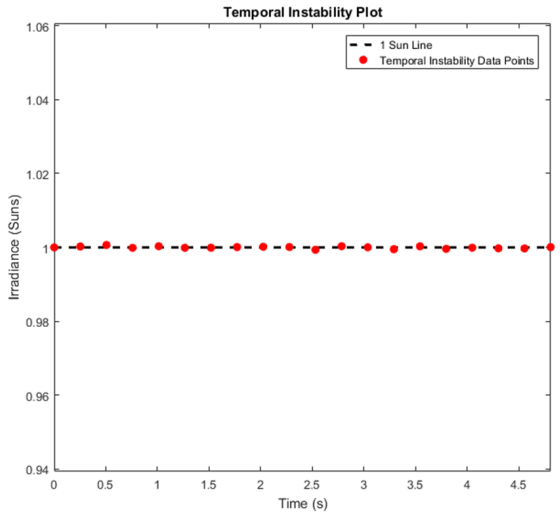



Non Uniformity Map of a SciSun Solar Simulator.

| | |
|---|---|
| **Detector Area:** | 0.28 cm2 |
| **Number of Measurement Points:** | 64 |
| **Measurement Point Area:** | 0.39 cm2 |
| **Maximum Irradiance:** | 1.0169 Suns |
| **Minimum Irradiance:** | 0.9842 Suns |
| **Sample Standard Deviation of Spatial Non-Uniformity:** | 0.008 Suns |
| **Spatial Non-Uniformity of Irradiance:** | 1.60% |
| **Classification:** | A |

## Class A Temporal Instability:

SciSun solar simulators meet Class A temporal instability. 0.05% Less than 2%.




| | |
|---|---|
| **Detector Area:** | 4 cm |
| **Time Between Data Points:** | 0.253 Sec |
| **Number of Power Line Cycles (NPLC):** | 1 |
| **Total Measurement Points:** | 20 |
| **Maximum Irradiance:** | 1.0007 Suns |
| **Minimum Irradiance:** | 0.9994 Suns |
| **Temporal Instability of Irradiance:** | 0.05% |

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# SciSun Solar Simulators

# STANDARD FEATURES

## Touchscreen Power Supply - 601

Each SciSun series solar simulator (non-LP series) comes with a 601-series power supply.

601– series power supply

Standard features included with Sciencetech's 601–series power supplies:

- Touchscreen interface
- Shutter and exposure control (if electronic shutter is supplied)
- Single connection for lamp power, cooling, and communication
- Lamp starts and timer log
- Fan cooling safety interlock
- RS232 software GUI included

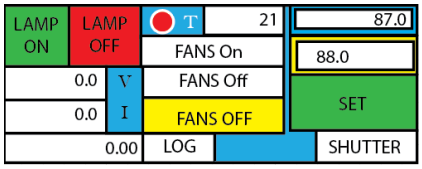
## Filter Box Assembly

This system has a modular optics assembly which can hold a range of filters in Sciencetech's standard FT style filter holder. The most popular options are AM filters; however a range of other filter options are available such as bandpass filters and neutral density filters.

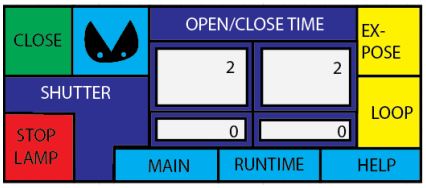
## Variable Aperture

Sciencetech's SciSun solar simulators include a variable aperture component, which allows variation of the output irradiance level without adjusting the power supply. The range of attenuation is continuously variable from 10% to 100%. Uniformity is best maintained at specific output levels. Non-uniformity versus output level for the VAR-ATTN-M may vary between models.

The SciSun-LP series features the EPS-series simplified power supply, which lacks a touchscreen, computer control, or control of electronic accessories.



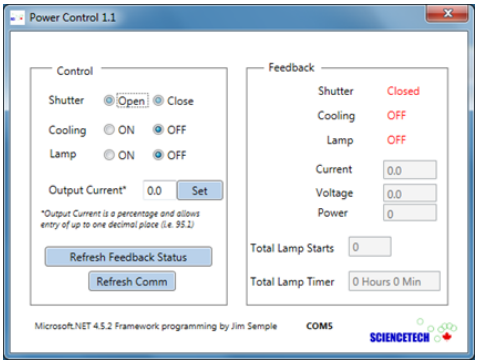

601-series touch screen power supply main control screen




601- series touchscreen power supply automatic shutter control screen

## Software Included

SciSun Solar Simulator come with SciLampPower Control.




Software GUI for power supply control

## Spectral Filter Options

AM1.5-FT-3 Model: Includes AM1.5 Filter-Class A with 160-8085 part number.

AM1.0D-FT-3 Model: Includes AM1.0D Filter-Class A with 160 -8086 part number.

AM1.5D-FT-3 Model: Includes AM1.5 Filter-Class A with 160-8087 part number.

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# SciSun Solar Simulators

# ACCESSORIES

SOL-METER (125-9011)

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

SSIVT-REF (125-9007)

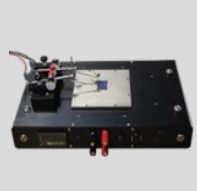
This silicon detector is designed to be used for monitoring and verifying the sun level of solar simulators.

SC-LT-Q (585-0154)

Calibrated Reference Cell, Quartz Window, traceable to NIST and NREL.

SSIVT-20C (175-9103)

20W IV Tester for Continuous Solar Simulators (current range = 1 A, voltage range = 200 V).



SCI-SCC3-TE (165-8202)

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

SCI-SCC3-L-B (165-8221)

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

# SciSun Solar Simulators

# ACCESSORIES

SCP-4T (165-8211)

Probe Station, 4 Probes, Tungsten Needle-tip Kelvin Probes

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.

Height Adjustable Stand (101-8024)

Height adjustable Stand. The stand allows to adjust the working distance as required.

MF-49-FT-3 (640-9006)

Standard 75 mm (3") neutral density mesh filters (different light transmissions available).

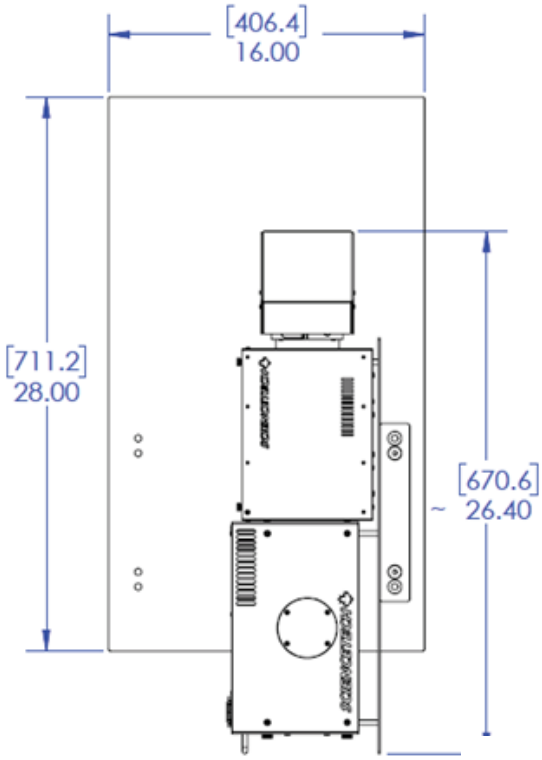
SH-SC3 (127-8004)

Computer controlled shutter. Installs inside SciSun

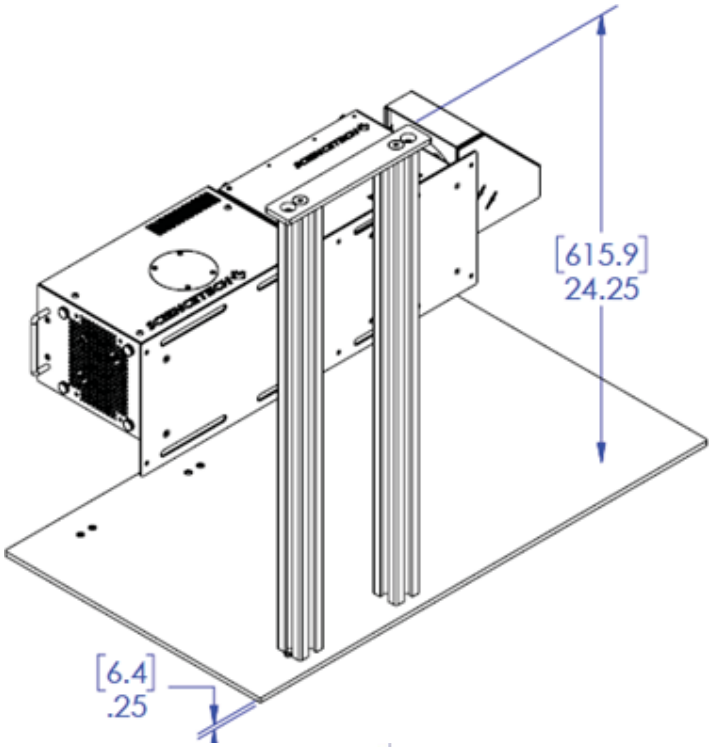
# SciSun Solar Simulators

# DIMENSIONS

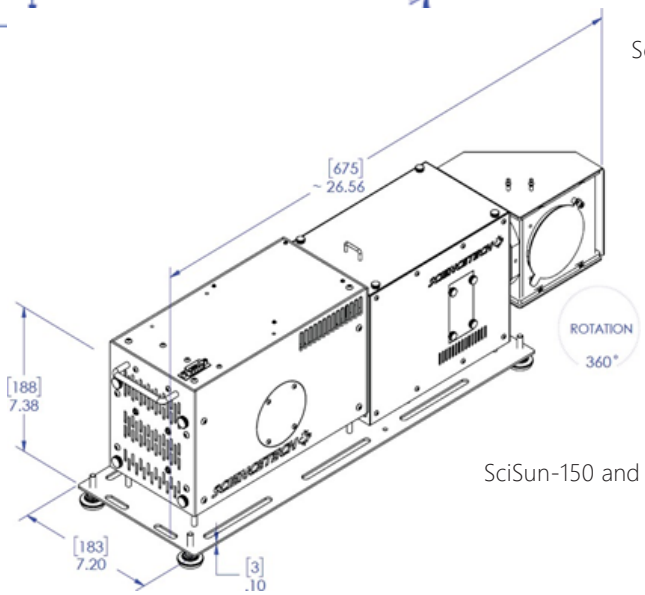
Dimensions are in [mm] and inches.




SciSun-150 and SciSun-300




SciSun-150 and SciSun-300




SciSun-150 and SciSun-300

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