

# LIGHTLINE FIBERIZED SOLAR SIMULATORS



## Features

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- Meets Class AAA ASTM standards
- Fiberized output for flexible illumination.
- Easy-to-use touchscreen controls
- Light intensity control is available
- Remote control by PC
- Cost-effective for researchers

## Applications

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- Testing photovoltaic cell performance
- Photochemistry
- Photobiology
- Testing for color fading of paints and fabrics, etc.

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# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## I. Overview

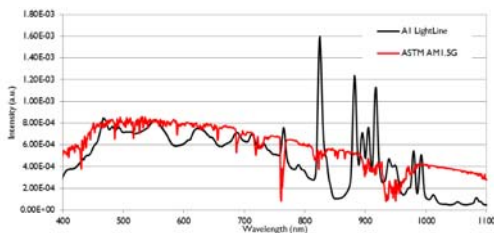
The Sciencetech Solar LightLine series of fiberized solar simulators are a revolution in the solar simulator industry. With the Solar LightLine you can direct the Class AAA solar light anywhere you wish with the standard 4 foot fiber. Classic designs for solar simulators require you to bring your sample to the solar simulator. Now you can bring the solar simulator to your sample.

The Solar LightLine simulators come standard with a touchscreen power supply, integrated shutter, and exposure controller. Multiple filter options are available to meet your specific needs.

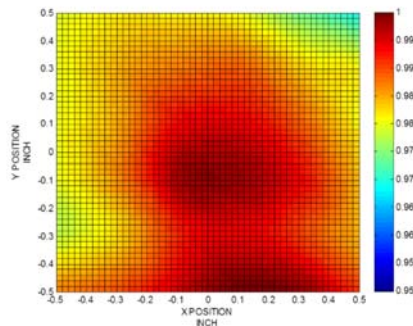
The Solar LightLine has four base models (A1-300W, A4-1000W, AX-300W, and CX-300W). Each model has multiple configuration options. Configuration options exist for Class

AAA illumination up to 50mm square and intensity up to 12Suns.

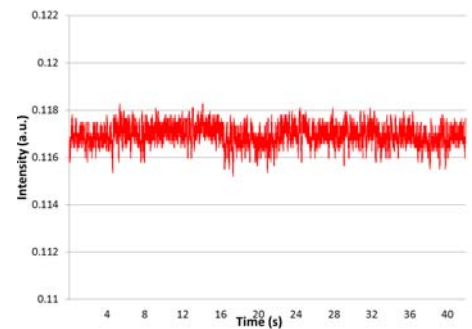
The Sciencetech Solar LightLine can match class A ASTM, IEC, and JIS solar simulator standards. A number of air mass filters are available for the Solar LightLine giving you the capability to customize the instrument for your requirements. In addition to spectral match filters you can also add intensity filters and other spectral filters like UV and IR blocking filters.



Class A Spectral Match



Class A Non-Uniformity



Class A Temporal Instability

| Model    | Power operation | Target Size | Sun Level <sup>1</sup> | Working Distance <sup>2</sup> | Class <sup>3</sup> | Projection Optics |
|----------|-----------------|-------------|------------------------|-------------------------------|--------------------|-------------------|
| A4-LA125 | 120/220VAC      | 25mm x 25mm | Up to 4 Suns           | 125 to 175 mm                 | AAA                | -LA125            |
| A4-LA200 | 120/220VAC      | 50mm x 50mm | 1 Sun                  | 225 to 300 mm                 | AAA                | -LA200            |
| A4-C250  | 120/220VAC      | Ø12.5mm     | Up to 12 Suns          | 125 to 175 mm                 | ACA                | -C250             |
| A1-LA125 | 120/220VAC      | 25mm x 25mm | 1 Sun                  | 125 to 175 mm                 | AAA                | -LA125            |
| A1-C250  | 120/220VAC      | Ø12.5mm     | 4 Suns                 | 125 to 175 mm                 | ACA                | -C250             |
| AX-LA125 | 120/220VAC      | 20x20 mm    | Up to 3 Suns           | 125 to 175 mm                 | AAA                | -LA125            |
| AX-LA200 | 120/220VAC      | 46x46 mm    | 1 Sun                  | 225 to 300 mm                 | AAA                | -LA200            |
| CX-C250  | 120/220VAC      | Ø12.5mm     | 9 Suns                 | 125 to 175 mm                 | ACA                | -C250             |

<sup>1</sup> With AM1.5G filter installed

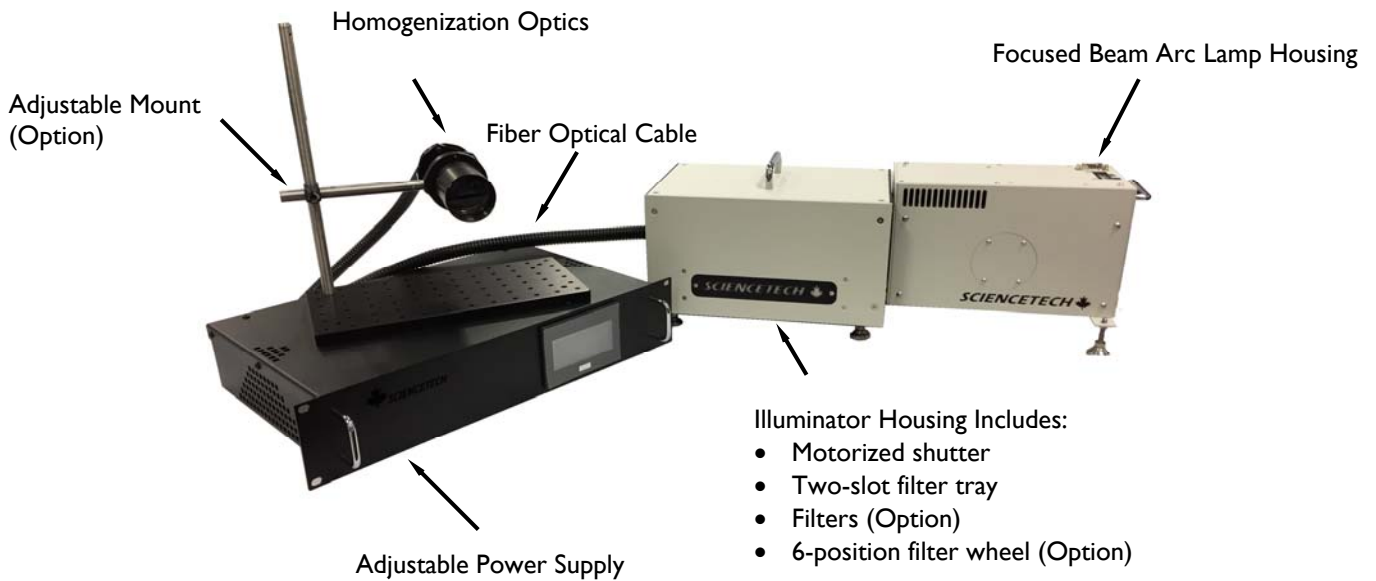
<sup>2</sup> Working distance can be customized with different optics but will change target size

<sup>3</sup> Tested to ASTM E927-05 standards, other standard testing is available upon request

# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## 2. Specifications

### AI LightLine

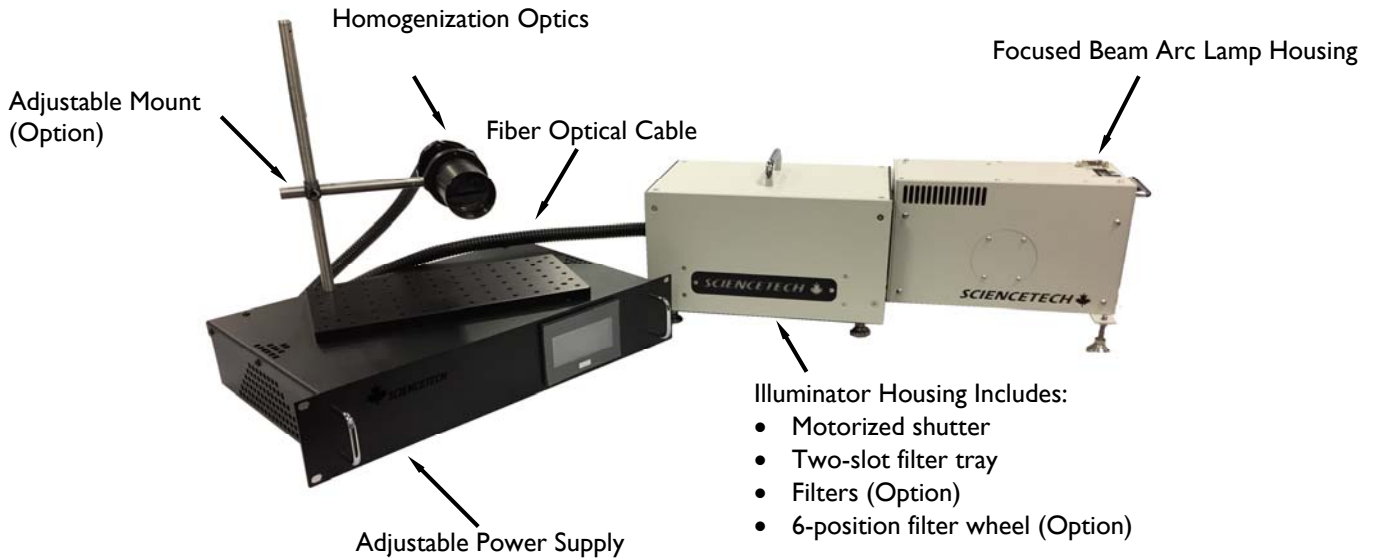


| MODEL                 | AI-LA125  | AI-C250       |
|-----------------------|---|---------------|
| ASTM Classification   | AAA   | ACA           |
| Target Size           | 25mm x 25mm   | Ø12.5mm       |
| Sun Level             | 1 Sun   | 4 Suns        |
| Working Distance      | 125 to 175 mm   | 125 to 175 mm |
| Wavelength Range      | 350 - 1800nm (Standard Spectral Match 400 - 1100nm)               |               |
| Air Mass Filter       | AM1.0D, AM1.5G, AM1.5D, AM2.0                                     |               |
| Collimation Angle     | 10° Half Angle (depends on selected optics)                       |               |
| Lamp                  | 300W Xenon, 1000h (average) Lifetime, Forced Air Cooling          |               |
| Shutter               | Integrated Touchscreen Control, 0 - 10000s, Adjustable Duty Cycle |               |
| Fiber Bundle Length   | 1.22m (4') Standard   |               |
| Power Supply Model    | 601-300   |               |
| Input Voltage/Current | Switchable   110-130V / 3A or 220-240V / 1.5A Operation           |               |
| Environment           | Temperature 10-35 °C, Humidity 20-80%, Avoid Condensation         |               |
| Dimension (LxWxH)     | 58.7cm x 20.6cm x 20.8cm  |               |
| Weight                | 5kg   |               |



# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## LightLine X



| MODEL                 | AX-LA125  | AX-LA200              | CX-C250    |
|-----------------------|---|-----------------------|------------|
| ASTM Classification   | AAA   | AAA                   | ACA        |
| Target Size           | 20x20 mm <sup>1</sup>   | 46x46 mm <sup>1</sup> | Ø12.5mm    |
| Sun Level             | 3 Suns  | 1 Sun                 | 9 Suns     |
| Working Distance      | 125-175 mm  | 225-300 mm            | 125-175 mm |
| Wavelength Range      | 350 - 1800nm (Standard Spectral Match 400 - 1100nm)               |                       |            |
| Air Mass Filter       | AM1.0D, AM1.5G, AM1.5D, AM2.0                                     |                       |            |
| Collimation Angle     | 10° Half Angle (depends on selected optics)                       |                       |            |
| Lamp                  | 300W Xenon, 1000h (average) Lifetime, Forced Air Cooling          |                       |            |
| Shutter               | Integrated Touchscreen Control, 0 - 10000s, Adjustable Duty Cycle |                       |            |
| Fiber Bundle Length   | 1.22m (4') Standard   |                       |            |
| Power Supply Model    | 601-300   |                       |            |
| Input Voltage/Current | 110-130V / 3A or 220-240V / 1.5A                                  |                       |            |
| Environment           | Temperature 10-35 °C , Humidity 20-80% , Avoid Condensation       |                       |            |
| Dimension (LxWxH)     | 76.8cm x 21.6cm x 38.3cm  |                       |            |
| Weight                | 20kg  |                       |            |

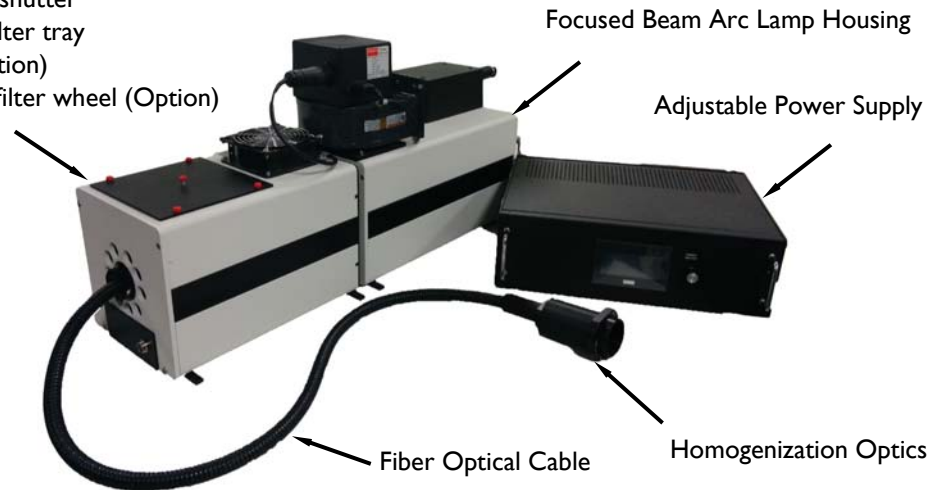
<sup>1</sup> Up to 25% larger classified uniform areas available at Class B and C ASTM non-uniformity.

# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## A4 LightLine

Illuminator Housing Included:

- Motorized shutter
- Two-slot filter tray
- Filters (Option)
- 6-position filter wheel (Option)



| MODEL                 | A4-LA125  | A4-LA200      | A4-C250       |
|-----------------------|---|---------------|---------------|
| AST Classification    | AAA   | AAA           | ACA           |
| Target Size           | 25mm x 25mm   | 50mm x 50mm   | Ø12.5mm       |
| Sun Level             | Up to 4 Suns  | 1 Sun         | Up to 12 Suns |
| Working Distance      | 125 to 175 mm   | 225 to 300 mm | 125 to 175 mm |
| Wavelength Range      | 350 - 1800nm (Standard Spectral Match 400 - 1100nm)               |               |               |
| Air Mass Filter       | AM1.0D, AM1.5G, AM1.5D, AM2.0                                     |               |               |
| Collimation Angle     | 10° Half Angle (depends on selected optics)                       |               |               |
| Lamp                  | 1000W Xenon, 1000h (average) Lifetime, Forced Air Cooling         |               |               |
| Shutter               | Integrated Touchscreen Control, 0 - 10000s, Adjustable Duty Cycle |               |               |
| Fiber Bundle Length   | 1.22m (4') Standard   |               |               |
| Power Supply Model    | 611-1k  |               |               |
| Input Voltage/Current | 110-130V / 9A or 220-240V / 6A                                    |               |               |
| Environment           | Temperature 10-35 °C , Humidity 20-80% , Avoid Condensation       |               |               |
| Dimension (LxWxH)     | 76.8cm x 21.6cm x 38.3cm  |               |               |
| Weight                | 20kg  |               |               |

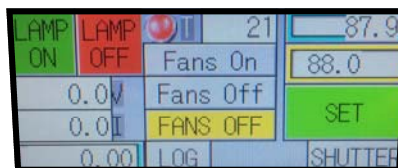
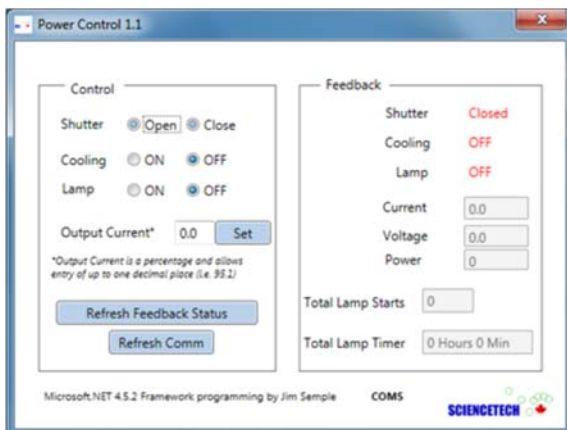


# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## 3. Accessories

### Touchscreen Power Supply

| MODEL (Default)                            | DESCRIPTION   |
|--|---|
| Shutter and Exposure Controller            | This feature provides an onboard shutter and exposure controller built into the power supply. A standard 2-pin connector is provided on the back of the power supply to connect a Sciencetech solenoid driven shutter mechanism. With this option the power supply firmware provides an interface for programming shutter loops and exposure sequences. |
| Power Connection for Cooling Fans          | The power connection for cooling fans feature provides a power pass through connection for the lamp house cooling fans. With this option the lamp housing cooling fans operation is monitored by the lamp house.  |
| Safety Interlock                           | With the safety interlock feature the power supply will turn off, extinguishing the lamp, if the interlock is opened. The interlock wiring can be connected to a mechanical safety interlock such as a magnetic switch or rocker switch on the lamp house.  |
| RS232 Computer Control                     | This feature provides RS232 computer control of the power supply through a DB9 connector mounted on the rear panel of the power supply (Power control I.I software and cable are included).   |
| MODEL (Option)                             | DESCRIPTION   |
| Programmable Remote Temperature Monitor/TM | The programmable remote temperature monitor option provides over temperature protection for the lamp house that the power supply is being used with. With this option an RTD or K-type Thermocouple is wired between the lamp house and power supply.   |
| Monitor Output/OC                          | This option provides a male nine pin connector on the rear of the power supply for monitoring the status of the power supply. Parameters that can be monitored: lamp current 0-10V, lamp voltage 0-10V, lamp On/Off (1-5V TTL).   |
| Auto Start Lamp/AS                         | The option provides the capability to automatically start the lamp. This allows the user to set a time for the light source to automatically ignite.  |



# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## Filters

Numerous filtering options are available with the Sciencetech Solar LightLine. The standard Solar LightLine comes with two filter slots. One slot is usually reserved for an air mass filter. The secondary slot can accommodate other filtering options.

| MODEL           | Code     | DESCRIPTION  |
|-----------------|----------|--|
| FT-75-3         | 100-8035 | Empty FT Style Filter Holder for 75mm Square or Diameter Filters (3mm thick)                   |
| MF-34-FT-3      | 640-9005 | 75mm Mesh 34% Neutral Density Filter with Holder   |
| MF-49-FT-3      | 640-9006 | 75mm Mesh 49% Neutral Density Filter with Holder   |
| MF-71-FT-3      | 640-9007 | 75mm Mesh 71% Neutral Density Filter with Holder   |
| HPF-BB-NIR-FT-3 | 640-9012 | Passes UVA, UVB, and VIS (280-730nm). Blocks NIR (730-1100nm).                                 |
| HPF-LP-VIS-FT-3 | 640-9014 | Passes VIS and NIR. Blocks UVA and UVB (<400nm).   |
| HPF-LP-NIR-FT-3 | 640-9015 | Passes NIR (700-2000 nm). Blocks UVA, UVB, and VIS (<700 nm).                                  |
| HPF-BB-VIS-FT-3 | 640-9016 | Passes UVA and UVB (245-400nm). Blocks VIS (400-700nm).  |
| HPF-LP-UVA-FT-3 | 640-9017 | Passes UVA, VIS, and NIR. Blocks UVB (<320nm)  |
| HPF-BB-UVB-FT-3 | 640-9018 | Passes UVB, VIS, and NIR. Blocks UVA (320-400nm)   |
| HPF-BP-VIS-FT-3 | 640-9019 | Passes VIS (400-700nm). Blocks UVA, UVB, and NIR.  |
| MF-25           | 640-9013 | Set of 25mm Diameter Wire Mesh Filters to Attenuate Solar Level. For use with the –SFW option. |
| AM1.0D-FT-3     | 160-8022 | Air Mass AM1.0D (Standard Range)   |
| AM1.5G-FT-3     | 160-8024 | Air Mass AM1.5G (Standard Range)   |
| AM1.5D-FT-3     | 160-8026 | Air Mass AM1.5D (Standard Range)   |
| AM2.0D-FT-3     | 160-8028 | Air Mass AM2.0D (Standard Range)   |
| WF-1Q           | 100-8048 | Compact IR Water Filter  |

FT-75-3



Mesh filter



Filters



WF-1Q



# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## Optional Accessories

| MODEL            | PART No. | DESCRIPTION  |
|------------------|----------|--|
| 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 (on three sides and one on the top) as well as a side door for easy access to the sample area.<br>Three of the side walls feature optical ports with a Sciencetech standard B4 hole pattern as well as removable anodized access panels that can be machined to accommodate most types of feedthroughs, including electrical, liquid and gas. |
| -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 and any angle in-between. Includes a sturdy baseplate.   |
| FB-0.5-8         | 670-0103 | 8 foot optical fiber upgrade to allow for further versatility with the A1, AX/CX and A4 LightLine. Please note that there will be a reduction in the power output with an 8 foot fiber.  |
| -SFW             | 189-9012 | 6-position computer controlled filter wheel (25 mm diameter filters)   |
| (UV-Glasses-Drk) | 720-0159 | Dark safety glasses  |

**SC-12**



**PM-90**



**-SFW**



**FB-0.5-8**

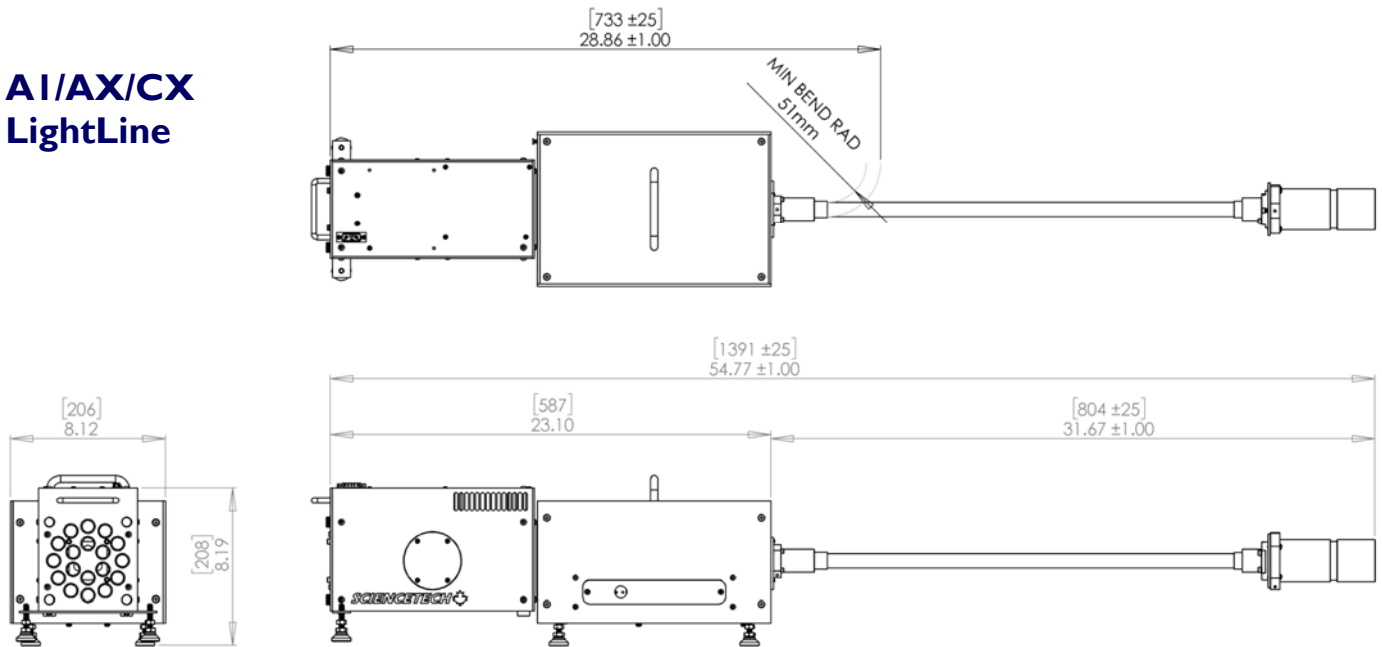




# LIGHTLINE FIBERIZED SOLAR SIMULATORS

## 5. Dimensions

### AI/AX/CX LightLine



### A4 LightLine

