

1600 W Oriel Solar Simulators



92193 Solar Simulator

These are our highest intensity solar simulators. They produce a highly collimated, very uniform output beam in various sizes from 2 x 2 to 10 x 10 inches. They deliver a close match to solar radiation. Add an air mass filter (see page 206) to these sources and you can simulate a variety of solar conditions. We offer full spectrum and UV Solar Simulators. Fig. 1 shows the spectral output of both types.

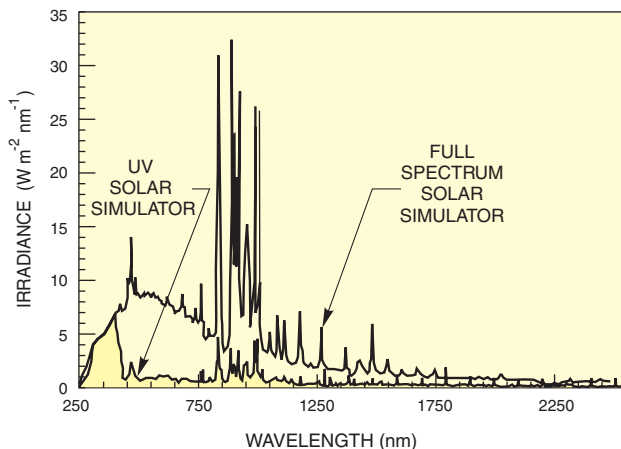


Fig. 1 Spectral output of a full spectrum 1600 W Solar Simulator, compared to the output of a 1600 W UV Solar Simulator.

Full Spectrum Solar Simulators

We offer 6 models of full spectrum 1600 W Solar Simulators: 5 produce collimated output beams and 1 produces a diverging beam up to 12 x 12 inches (305 x 305 mm). For this model, we replaced the collimating lens with a window. Table 1 shows the typical output, in the design-irradiated plane, for our collimated models.

Table 1 Typical Output of 2 x 2 to 8 x 8 Inch Full Spectrum Solar Simulators

With This Optional Air Mass Filter	Typical Output (W m ⁻²)							
	2 x 2 Inch		4 x 4 Inch		6 x 6 Inch		8 x 8 Inch	
	250 - 2500 nm	250 - 1100 nm	250 - 2500 nm	250 - 1100 nm	250 - 2500 nm	250 - 1100 nm	250 - 2500 nm	250 - 1100 nm
AM 1 Direct	14917	10608	3978	2825	1820	1300	1105	780
AM 1.5 Direct	13470	9555	3595	2548	1650	1170	985	702
AM 2 Direct	12675	8840	3380	2365	1560	1092	936	650
AM 1.5 Global	9295	7940	2485	2120	1138	975	683	585
AM 0	17428	12740	4645	3430	2130	1560	1275	930
Unfiltered Irradiance	22256	17810	5935	4745	2730	2185	1625	1300

- Highest intensity Oriel Solar Simulators
- Highly collimated, large area output beam (up to 10 x 10 inches)
- Optional air mass filters shape the output spectra
- Various beam configurations are possible

UV Solar Simulators

These models produce very high intensity UV, and little VIS and IR. Take extreme caution when working with these sources. Table 2 shows the typical output (W m⁻²) of the 92291, 2 x 2 Inch UV Solar Simulator.

Table 2 Typical Output of 92291 UV Solar Simulator

With These Optional UV Filters	Typical Output (W m ⁻²)		
	UVC, Below 280 nm	UVB, 280 - 320 nm	UVA, 320 - 400 nm
Atmospheric Attenuation Filter	0	48	1040
Atmospheric Attenuation Filter + VIS-IR Bandpass Blocking Filter	0	40	660
UVC Blocking Filter	0	142	1063
UVB/C Blocking Filter	0	0.43	836
Unfiltered Irradiance	70	369	1150

What Makes up a Solar Simulator?

The Illuminator Housing

The illuminator housing is a temperature-controlled enclosure equipped with a safety interlock and a thermal interlock system to ensure operator and system safety. An integral fan and filter blower provides forced air-cooling to maintain the lamp, optics and housing at a safe operating temperature.

1000 W Xenon Arc Lamp

Both families of Solar Simulators use an ozone free lamp, which has negligible output below 260 nm. Even without the DUV output, these sources emit dangerous levels of UV radiation.

TECHNICAL
REFERENCE

CALIBRATION SOURCES

DEUTERIUM SOURCES

ARC SOURCES

INCANDESCENT SOURCES

MONOCHROMATOR AND
FIBER ILLUMINATORS

SOLAR SIMULATORS

PHOTOLITHOGRAPHY
INSTRUMENTS

ACCESSORIES FOR
ORIEL LIGHT SOURCES

Power Supply

The 69922 Power Supply is highly regulated and maintains a very stable light output. For long-term stability-critical applications (>8 hours), order the 68951 Digital Exposure Controller (see page 208). The 69922 has an RS-232 computer interface (and optional IEEE-488); you can set the lamp parameters, monitor the light output, and turn power on/off remotely. Because of the extremely high intensity of these sources, we suggest operating the lamps remotely.

UVB/UVA Dichroic Mirror (For UV Solar Simulators Only)

For the UV Solar Simulators we replace the aluminized mirror with a dichroic, which passes 280 to 400 nm and greatly reduces the VIS and IR. You can further shape the simulator's output by using UV blocking filters after the dichroic.

Electronic Shutter

Our Solar Simulators include an electronic shutter. You can externally control this shutter from the Digital Control Panel on the Illuminator housing, or via a hand held switch, contact closure, or logic level input. For automated exposure control, order the 68945 Digital Timer (see page 208).

Certification

These systems meet Class B IEC 904-9 requirements, but do not come certified.

Safety Considerations

These sources emit dangerous levels of UV radiation, harmful to the eyes and skin. Personnel working near these sources must wear a UV protective facemask, and gloves (see page 246). All exposed areas of skin must be covered.

Specifications

Wattage	1600 W
Lamp Type	Xenon short arc
Beam Uniformity	±5 %
Light Ripple	<1 % r.m.s.
Solar Simulator Input	220 V AC 50/60 Hz, 15 A
Line Regulation	0.01 %

Ordering Information

Solar Simulators

Please specify upward, downward or sideways beam configuration when ordering.

Simulator Type	Beam Size inch (mm)	Model
Full Spectrum Solar Simulator	2 x 2 (51 x 51)	92191
	4 x 4 (102 x 102)	92192
	6 x 6 (152 x 152)	92193
	8 x 8 (203 x 203)	92194
	Diverging up to 12 x 12 (305 x 305)	92190
UV Solar Simulator	2 x 2 (51 x 51)	92291
	4 x 4 (102 x 102)	92292
	6 x 6 (152 x 152)	92293
	8 x 8 (203 x 203)	92294
	10 x 10 (254 x 254)	92295

Replacement Lamp

Model	Description
62711	1600 W Xe, OF

Accessories

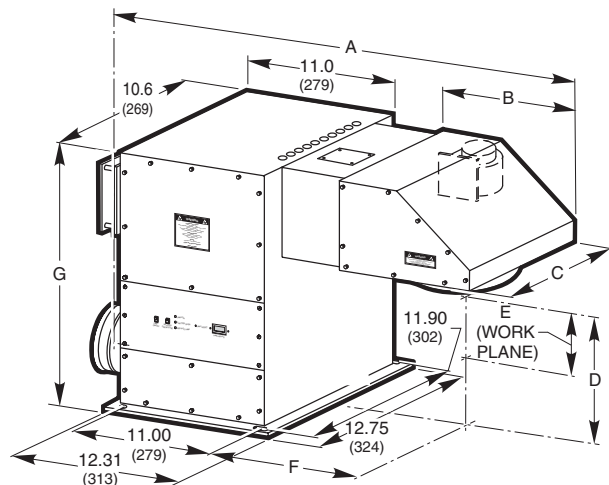
Model	Description
92000	Extended Care Program
68955	Remote Switch

WEB See our website
for more info

Oriel Solar Simulator Drawings

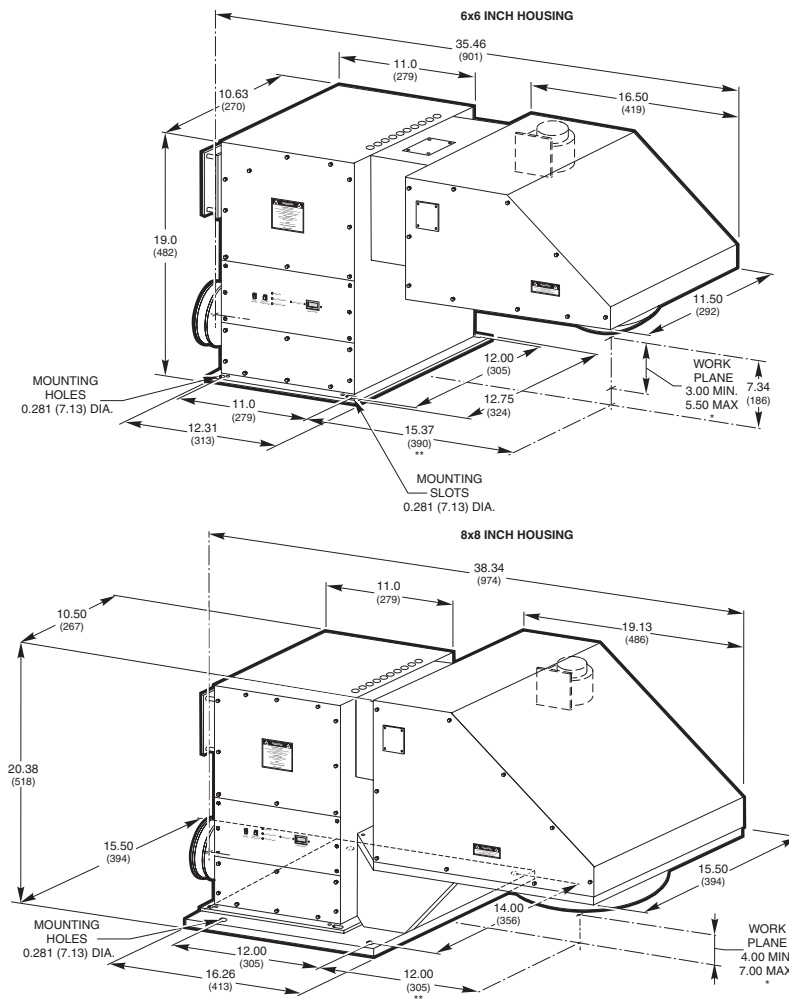
Here we show the dimensional diagrams of our 1000 to 1600 W Class A and Standard Oriel Solar Simulator Housings.

TECHNICAL REFERENCE
CALIBRATION SOURCES
DEUTERIUM SOURCES
ARC SOURCES
INCANDESCENT SOURCES
MONOCHROMATOR AND FIBER ILLUMINATORS
SOLAR SIMULATORS
PHOTOLITHOGRAPHY INSTRUMENTS
ACCESSORIES FOR ORIEL LIGHT SOURCES



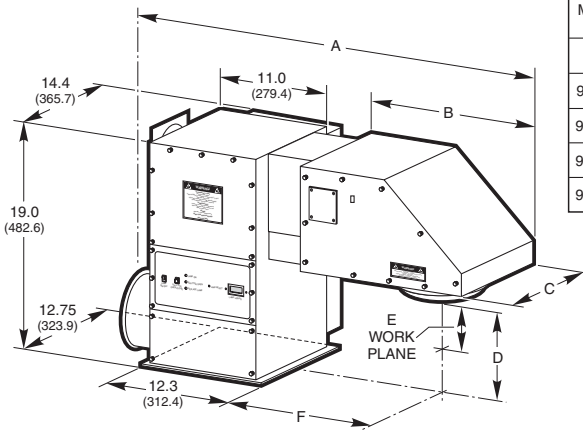
1000 W SYSTEMS BEAM SIZES	A	B	C	D	E		F	G
					MIN.	MAX.		
2X2	26.20 (665)	7.25 (184)	7.25 (184)	11.06 (281)	1.25 (32)	2.0 (51)	8.87 (225)	20.5 (521)
4X4	29.83 (758)	10.88 (276)	8.50 (216)	8.12 (206)	2.0 (51)	4.0 (102)	10.99 (279)	19.0 (483)
DIVERGING	29.83 (758)	10.88 (276)	8.50 (216)	10.25 (260)	3.0 (76.2)	17.0 (432)	10.99 (279)	19.0 (483)

Fig. 1 Dimensional diagram of 2 x 2 and 4 x 4 inch, and Diverging 1000 W Solar Simulator Housings.



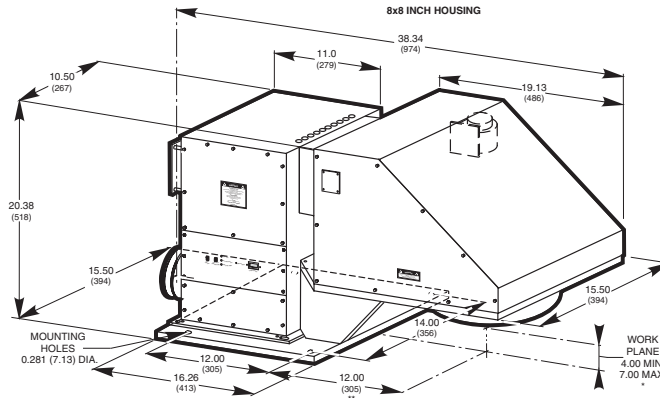
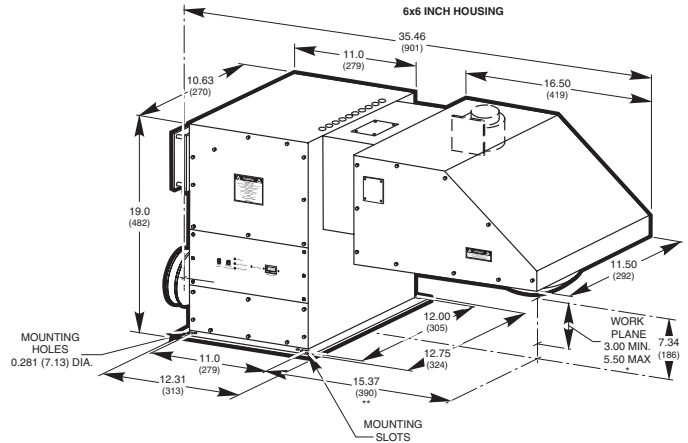
* THE DISTANCE FROM THE VERTEX OF THE LENS TO THE WORK PLANE.
** THE DISTANCE FROM THE CENTER OF THE BEAM PATH TO THE CENTER OF THE MOUNTING HOLE.

Fig. 2 Dimensional diagram of 6 x 6 and 8 x 8 inch 1000 W Solar Simulator Housings.



MODEL NO.	A	B	C	D	E		F
					MIN.	MAX.	
92190	29.76 (756)	10.88 (276)	8.63 (219)	10.25 (260.4)			11.0 (279.4)
92191/92291	26.2 (666)	7.25 (184)	7.38 (188)	12.1 (307)	1.25 (32)	2.5 (64)	8.86 (225)
92192/92292	29.76 (756)	10.88 (276)	8.63 (219)	8.53 (260)	2.0 (51)	4.0 (102)	11.0 (279.4)
92193/92293	35.38 (899)	16.5 (419)	11.63 (295)	7.55 (192)	3.0 (76)	5.5 (140)	15.36 (390)
92194/92294	38.0 (965)	19.13 (486)	15.63 (397)	5.0 (127)	4.0 (102)	7.0 (178)	11.75 (298)

Fig. 3 Dimensional diagram of 2 x 2, 4x4 and Diverging 1600 W Solar Simulator Housings.



* THE DISTANCE FROM THE VERTEX OF THE LENS TO THE WORK PLANE.
 ** THE DISTANCE FROM THE CENTER OF THE BEAM PATH TO THE CENTER OF THE MOUNTING HOLE.

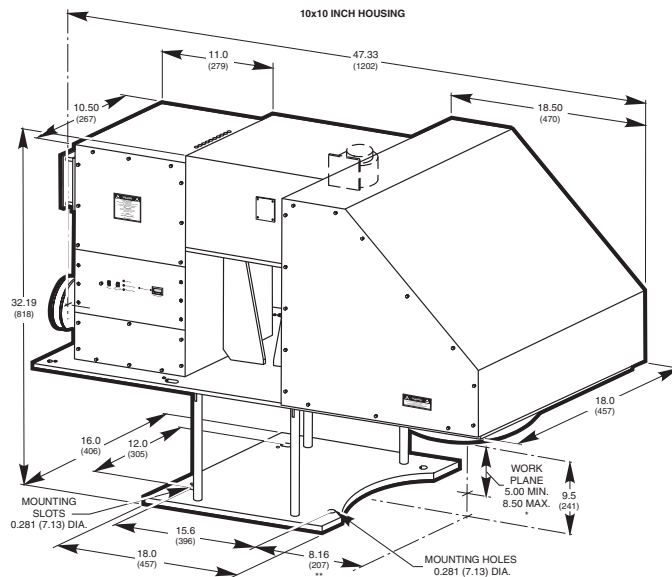


Fig. 4 Dimensional diagram of 6 x 6 to 10 x 10 inch 1300 and 1600 W Solar Simulator Housings.