

Solar Simulator (350-1800nm)

HAL-320W

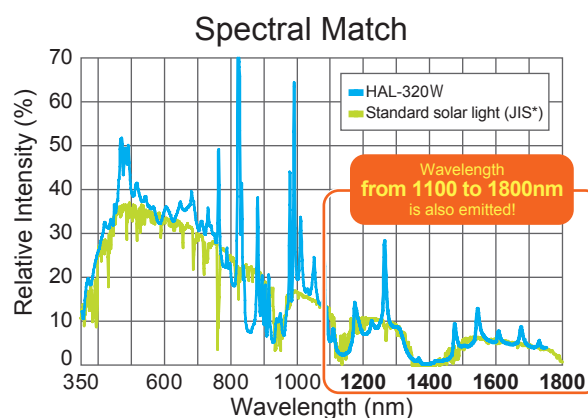
95% high approximation of solar spectrum with AM1.5G, compact design and fiber illumination



Features

- JIS* Class AAA solar simulator (350-1800nm)
- NIR output with high approximation
- Built-in AM1.5G filter
- Flexible illumination by light guide
- Adjustable light intensity
- Self-contained lamp and power supply
- No need of optical axis alignment
- External controller
- RS232C remote control

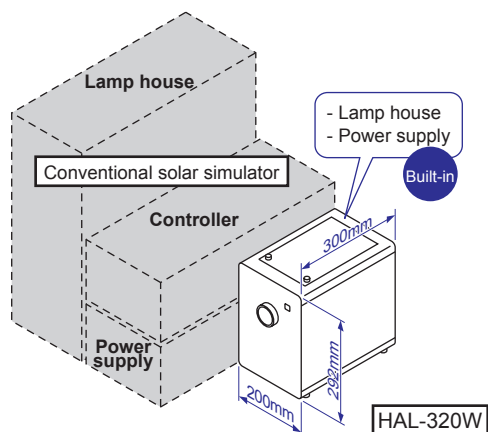
*JIS, Japanese industrial standards is equivalent to IEC.



Our unique fiber output method enables the use in various experimental configurations

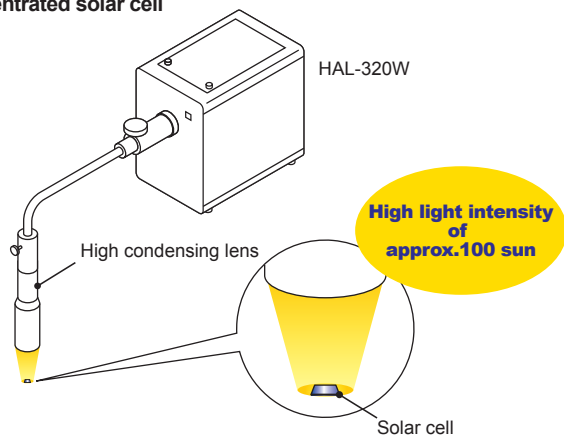
HAL-320W is a compact and easy-carrying solar simulator including an AM1.5G filter. HAL-320W achieves "Class A" spectral match in the broader wavelength inspite of the same size as the conventional model. Fiber output system enables flexible design of experiments: combination with a glove box, a prober, manufacturing line and so on.

Compact and Easy-carrying

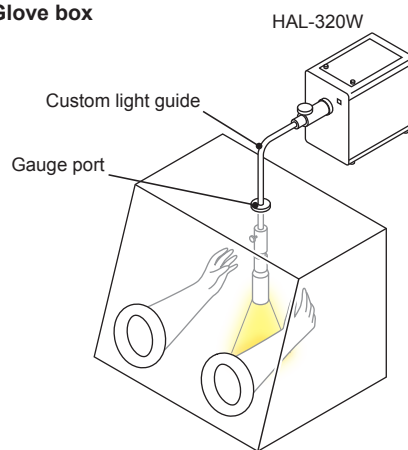


Flexible Configuration with Light Guide

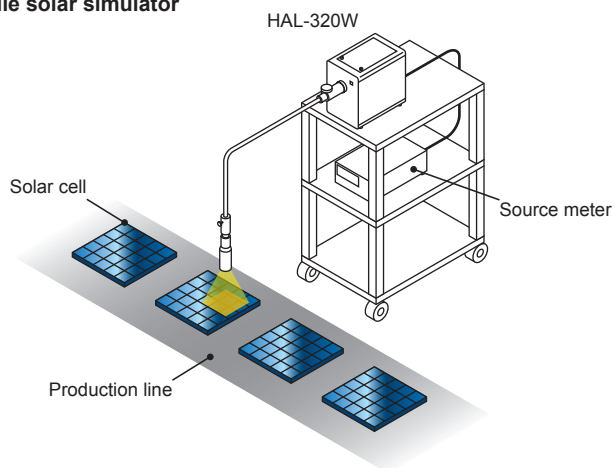
Solar simulator with high light intensity for concentrated solar cell



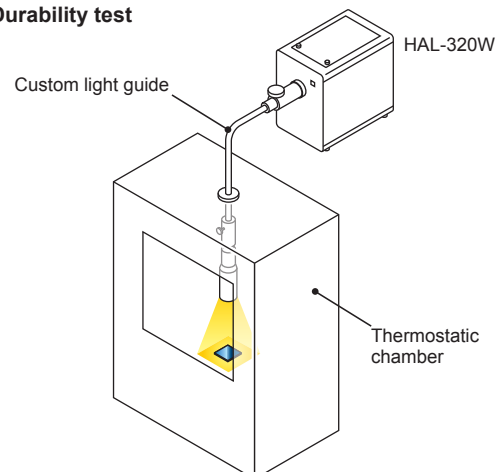
Glove box



Mobile solar simulator



Durability test



Compact solar simulator achieves Class AAA in the range of 350-1800nm with fiber output system

Spectral Match

Class A

Reference data

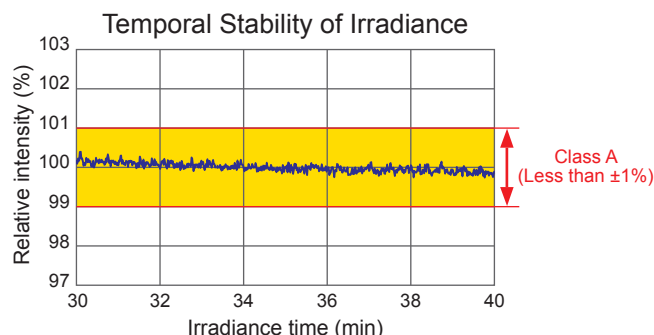
Wavelength (nm)	Energy Distribution (%)		Spectral Match	Class
	HAL-320W	JIS		
400 - 500	16.280	15.271	1.07	A
500 - 600	15.827	16.522	0.96	A
600 - 700	15.257	15.234	1.00	A
700 - 800	12.611	12.383	1.02	A
800 - 900	9.607	10.342	0.93	A
900 - 1100	14.199	13.228	1.07	A
1100 - 1300	7.141	8.159	0.88	A
1300 - 1500	2.280	2.061	1.11	A
1500 - 1800	6.798	6.799	1.00	A

- The values from 1100 to 1800nm is checked by the same calculation method as JIS C8912.
 - The both of JIS C8912-2011 and JIS C8933-2011 are class A.
- *JIS, Japanese industrial standards is equivalent to IEC.

Temporal Stability of Irradiance

Class A

There is less flicker and stable output at long times.



*10 minutes measurement after turning on the lamp for 30 minutes.
*The values are for reference only.

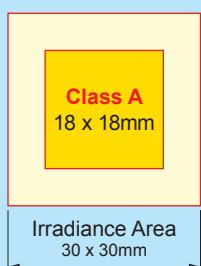
*If you use the HAL-320W for a long time, we recommend that you use the constant-voltage power supply so that the HAL-320W is not influenced by the change of load.

Uniformity

Class A

The calculated value of 1SUN in the range of 350-1800nm is about 94.4mW/cm².
Working distance: about 220mm

Light intensity decline due to a lamp life can be adjusted by light intensity control.
The size of Class A area is reference value.
Please note that the output of lamp varies among the manufacturing lots.
It needs to check the light intensity separately.

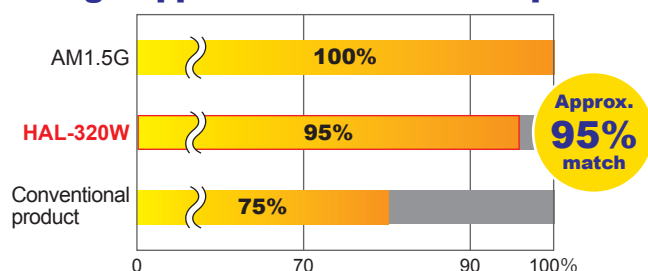


JIS Classification

JIS C8912-2011

Item	Class A	Class B	Class C
Positional uniformity of irradiance (%)	$\leq \pm 2$	$\leq \pm 3$	$\leq \pm 10$
Temporal stability of irradiance (%)	$\leq \pm 1$	$\leq \pm 3$	$\leq \pm 10$
Spectral match	0.75 - 1.25	0.6 - 1.4	0.4 - 2.0

High Approximation of Solar Spectrum



Target Solar Cell

- Multijunction solar cell
- Concentrated solar cell
- Quantum dot solar cell

User-friendly External Controller



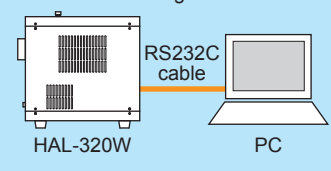
- < Operation contents >
1. Shutter function Open/Close
 2. Timer function
 3. Light intensity adjustment etc.

The HAL-320W is controlled by our proprietary controller. Various functions can be easily controlled just by pressing the control buttons of the controller and it has a comprehensive display.

RS232C Remote Control



< Connection image >

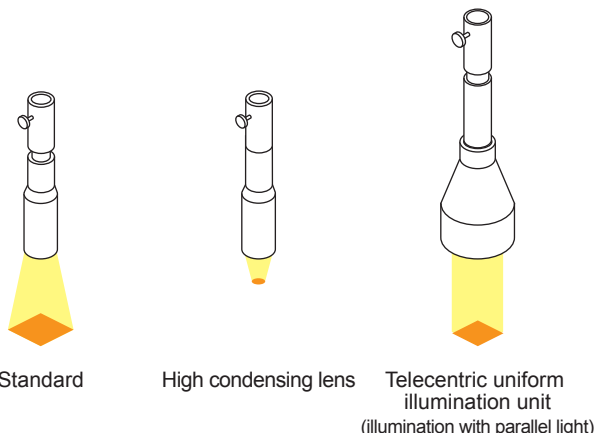


The HAL-320W can be controlled remotely via RS232C.

Options

Collimator Lens

The high condensing lens and telecentric uniform illumination unit are also available depending on your application.



Light Guide (TPO)



This light guide is the option for bringing a light into a glove box.
The gauge port is equipped.

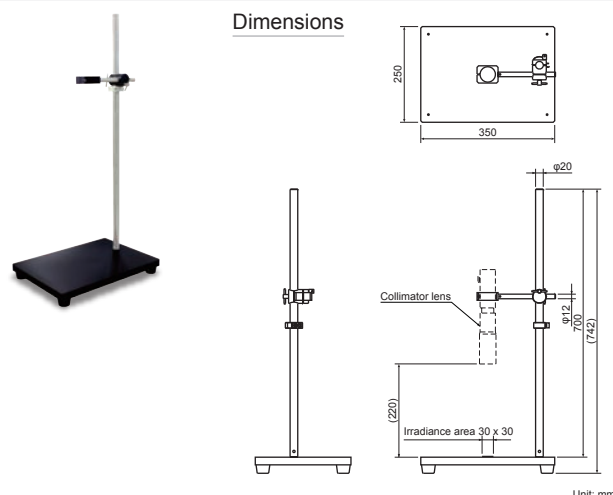
Scope of Delivery

- HAL-320W main unit
- Lamp cartridge
- Low OH fused silica light guide (1m)
- Light guide adapter
- Collimator lens
- Controller
- Controller cable (2m)
- AC cable (3m)
- RS232C cable (1.8m)
- Instruction manual

General Specifications

- Model: HAL-320W
Output wavelength: 350 - 1800nm
Circuit method: Switching power supply
Input voltage: AC100 - 240V 50/60Hz (Input range: AC90 - 264V)
Apparent power: Less than 510VA (AC100V/50Hz)
Less than 500VA (AC240V/50Hz)
Lamp type: Compact xenon lamp 300W
Lamp voltage, current: 14V, 21A (DC) *Representative value
Lamp life: 500h (Average)
Optical axis alignment: Cartridge type (Alignment-free)
Cooling method: Forced air cooling
Shutter: Solenoidal drive
Exposure time set: 0.5 - 99999.9sec
Light intensity control: 100 - 30 (Steps)
Continuously variable
Air Mass filter: Air Mass 1.5G filter
Emitting method: Bundled light guide
Controller: Remote controller (Cable length=2m)
Remote control: RS232C *The cable must be less than 3m.
Safety mechanism: Xenon lamp problem, Top door is open, Lamp usage exceeds 500 hours, Cooling fan problem, Temperature anomaly
Recommended environment: Temperature 10 - 35 deg C
Humidity 20 - 80% *Avoid condensation
Dimensions: Main unit 200(W) x 300(D) x 292(H)mm
Controller 160(W) x 37(D) x 99(H)mm
Weight: Main unit 11.3kg
Controller 0.6kg (including cable)

Stand for Collimator Lens



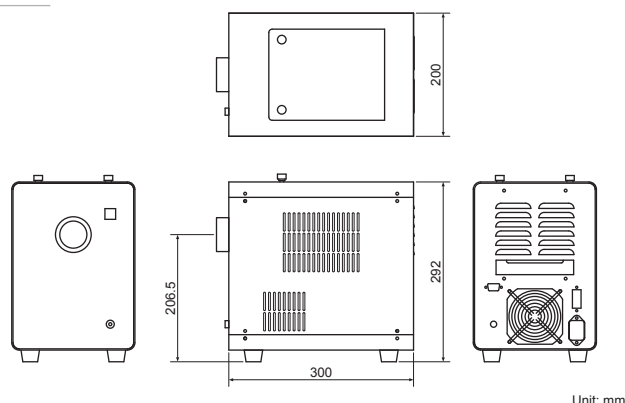
1 SUN Checker CS-40



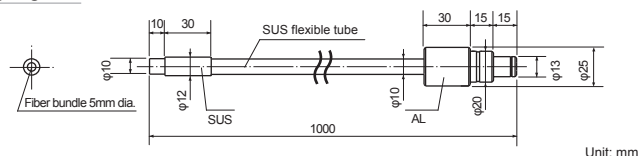
1 SUN Checker is used for checking the light intensity (1 SUN) of HAL-320W.
It is battery operated and portable.

Dimensions

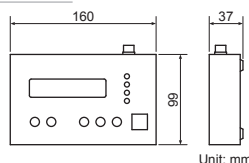
Main unit



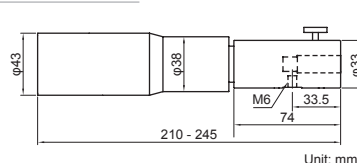
Light guide



Controller



Collimator lens



*Product specifications are subject to change without notice.

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