



# Q-SUN Xenon Test Chambers

## Overview

Q-SUN® xenon arc chambers reproduce the damage caused by full-spectrum sunlight and rain. In a few days or weeks, Q-SUN testers can reproduce the damage that occurs over months or years outdoors.

## Features

Q-SUN xenon arc chambers are available in four different models. The tabletop Xe-1, and full-sized Xe-2 and Xe-3 are covered in this document. The large capacity rotating rack Q-SUN Xe-8 is covered in the [Q-SUN Xe-8 Specifications](#). Each tester is 100% air-cooled, for extreme reliability and simple, low-cost maintenance. All testers have standard datalogging via ethernet, a variety of standard specimen holders, and a remarkably simple dual touchscreen user interface available in 17 languages.

	Xe-1	Xe-2	Xe-3
<b>Chamber Type</b>	Flat Array	Rotating Rack	Flat Array
<b>Specimen Capacity</b>	17	31	55
<b>Specimen Orientation (measured from horizontal)</b>	10°	90°	10°
<b>Full Spectrum, Ozone-Free Xenon Arc Lamps - 1800 W</b>	1	1	3
<b>SOLAR EYE® Irradiance Control (340 nm, 420 nm or TUV)</b>	●	●	●
<b>Relative Humidity Control</b>	—	●	●
<b>Water Spray</b>	○	○	○
<b>Heated Water Immersion</b>	○	—	—

## Optical Filters and Radiometers

● Standard ○ Optional — Not Available

Q-SUN optical filters are very durable and all filters maintain the required spectrum indefinitely, lasting for years under normal use with proper maintenance (except Window-IR). The application or test standard dictates which filter to use. Xe-1 and Xe-3 filters are flat, while the Xe-2 filter lantern consists of an outer borosilicate or quartz cylinder and 14 inner filters.

	Xe-1 & Xe-3 Irradiance Values Typical (& Maximum) <sup>1</sup>			Xe-2 Irradiance Values Typical (& Maximum) <sup>1</sup>		
	W/m <sup>2</sup> /nm @ 340 nm	W/m <sup>2</sup> /nm @ 420 nm	W/m <sup>2</sup> @ TUV (300-400 nm)	W/m <sup>2</sup> /nm @ 340 nm	W/m <sup>2</sup> /nm @ 420 nm	W/m <sup>2</sup> @ TUV (300-400 nm)
<b>Daylight-F<sup>3</sup></b>	0.80 (1.30)	1.50 (2.40)	75 (125)	0.80 (0.95)	1.50 (1.70)	75 (85)
<b>Daylight Q<sup>3</sup></b>	0.68 (1.10)			0.68 (0.80)		
<b>Extended UV (-Q/B,-Quartz<sup>4</sup>)</b>				0.51 (0.61) <sup>2</sup>		
<b>Daylight-B/B<sup>3</sup></b>				0.55 (0.65)		
<b>Window (-Q, -B/SL)</b>	0.55 (0.85)			70 (108)		
<b>Window (-SF5, -IR, -B04<sup>5</sup>)</b>	-	42 (68)	-	42 (62)		

- For important warranty information, visit [Q-Lab.com/Warranty](http://Q-Lab.com/Warranty). Warrantied values are dependent on irradiance, lamp type, and tester model:
  - Minimum irradiance is 0.25 @340 nm, 0.45 @420 nm, and 20 @TUV for all lamp types and tester models.
  - Typical irradiance (and all lower values down to Minimum) is warrantied for 3000 hours when using X-1800+ or X-1850+ "plus" lamps in "E" models, and 1500 hours when using X-1800 or X-1850 lamps or in non-"E" models.
  - Maximum irradiance (and all lower values above Typical) is warrantied for 1000 hours, only when using X-1800+ or X-1850+ "plus" lamps in "E" models.
- An "Intermediate" irradiance of 0.55 W/m<sup>2</sup>/nm for Daylight-B/B filters is additionally warrantied for 2000 hours, only when using X-1850+ lamps in Xe-2 "E" models.
- Daylight-F and Daylight-Q filters meet the requirements of Type I Daylight filters defined in ISO 4892-2 and ASTM G155. Daylight-B/B filters meet the requirements of Type II Daylight filters.
- Extended UV-Quartz filters are available for Xe-1 and Xe-3 testers only.
- Window-B04 lantern is available for Xe-2 testers only.

## Calibration, Temperature and Humidity Control

Q-SUN Xe-2 and Xe-3 testers simultaneously control chamber air temperature (CAT) and black panel (uninsulated/BP) or black standard (insulated/IBP/BST) temperature; the Xe-1 controls either, but not both. A disposable electronic relative humidity and CAT sensor provides precise control of relative humidity of the Xe-2 and Xe-3 and should be replaced annually. All Q-SUN testers can be calibrated quickly and easily using Q-Lab's Universal Calibrator system, featuring the patented AUTOCAL® system.

	Xe-1	Xe-2	Xe-3
<b>AUTOCAL UC20 Irradiance Control</b>	●	●	●
<b>UC202 Black Panel Thermometer</b>	●	●	●
<b>Chamber Air Temp (CAT) Sensor</b>	○	●	●
<b>Relative Humidity (RH) Sensor</b>	—	●	●

● Standard ○ Optional — Not Available



## Operating Specifications

Models	Xe-1						Xe-2		Xe-3					
Configurations <sup>1</sup>	Xe-1-BE Xe-1-SE		Xe-1-BCE Xe-1-SCE		Xe-1-WE		Xe-2-HE Xe-2-HSE Xe-2-HBSE		Xe-3-HE Xe-3-HSE	Xe-3-HDSE <sup>2</sup> Xe-3-HBSE		Xe-3-HCE Xe-3-HSCE		
	BP	IBP	BP	IBP	BP	IBP	BP	IBP	BP	IBP	BP	IBP	BP	IBP
<b>Black Panel Temp<sup>3</sup> (°C)</b>														
Light	45-90	50-100	25-90	25-100	45-90	50-100	50-100	55-105	45-110	50-120	35-110	36-120		
Light w/IR Filter	40-70	45-80	20-70	20-80	40-70	45-80	35-85	40-90	40-90	45-100	30-90	31-100		
Dark	25-50	25-50	10-50	10-50	25-50	25-50	25-45	25-45	25-50	25-50	15-50	15-50		
Light+Immersion	—	—	—	—	35-55	35-55	—	—	—	—	—	—		
Dark+Immersion	—	—	—	—	30-50	30-50	—	—	—	—	—	—		
<b>Chamber Air Temp<sup>3,4</sup> (°C)</b>	<b>CAT</b>		<b>CAT</b>		<b>CAT</b>		<b>CAT</b>		<b>CAT</b>		<b>CAT</b>		<b>CAT</b>	
Light (any filter)	35-55		15-55		—		35-65		35-65		25-65		—	
Dark	30-45		10-40		—		25-45		25-50		15-50		—	
<b>Relative Humidity<sup>3</sup></b>	N/A						20-95%		20-95%					
<b>Specimen Area</b>	25 × 46 cm (d × w) (9.9 × 18.0 in)			22 × 42 cm (d × w) (8.8 × 16.5 in)		30 × 25 cm (h × dia) (11.9 × 9.8 in)		45 × 72 cm (d × w) (17.8 × 28.3 in)						
<b>Specimen Capacity<sup>5</sup> (qty @ size)</b>	17 @ 51 × 102 mm (2 × 4 in)			15 @ 51 × 102 mm (2 × 4 in)		31 @ 45 × 132 mm (1.8 × 5.2 in)		55 @ 51 × 102 mm (2 × 4 in)						
<b>Max Specimen Weight (distributed evenly)</b>	14 kg (30 lbs)						4.5 kg (10 lbs)		23 kg (50 lbs) <sup>6</sup>					
<b>Inlet Water Pressure and Purity<sup>7</sup></b>	All non-"S", non-"W" models <sup>1</sup> : 0.7-6.2 bar (10-90 psi); > 200 kΩ-cm; < 5 μS/cm; < 2.5 ppm TDS All "S" or "W" models: 2.1-6.2 bar (30-90 psi); > 5 MΩ-cm; < 0.2 μS/cm; < 0.1 ppm TDS; < 0.1 ppm colloidal silica													
<b>Water Consumed with Spray On<sup>8</sup></b>	0.12 L/min		0.12 L/min		~ 0.0 L/min		0.5 L/min (front) 1.0 L/min (front & back)		0.16 L/min (front) 0.4 L/min (front & back)		0.16 L/min			
<b>Water Consumed with Humidifier On<sup>8</sup></b>	—						8 L/day		44 L/day					
<b>External Dimensions<sup>9</sup> (w × h × d)</b>	78 × 52 × 65 cm (31 × 21 × 26 in)		78 × 138 × 79 cm (31 × 55 × 31 in) <i>Xe-1 &amp; Chiller</i>		99 × 72 × 65 cm (39 × 28 × 26 in)		91 × 166 × 69 cm (36 × 66 × 27 in)		91 × 178 × 99 cm (36 × 70 × 39 in)		78 × 94 × 94 cm (31 × 37 × 37 in) <i>Chiller Only</i>			
<b>Weight<sup>10</sup></b>	50 kg (110 lbs)		124 kg (272 lbs)		88 kg (195 lbs)		172 kg (379 lbs)		190-233 kg (420-512 lbs)		85 kg (186 lbs) <i>Chiller Only</i>			
<b>Electrical<sup>11</sup> Requirements</b>	208 V (230 V)	1-Φ @ 12 A (11 A)		1-Φ @ 19 A (16 A)		1-Φ @ 13 A (12 A)		1-Φ @ 24 A (23 A)		3-Φ @ 39 A (39 A)		3-Φ @ 44 A (44 A)		
	400 V	—						—		3-Φ @ 26 A				
<b>Lab Recommendations<sup>12</sup></b>	Temperature (°C)						23 ± 5 °C							
	Relative Humidity (%)						50 ± 25%							

### Notes:

- 1) Nomenclature designations: basic (B), spray (S), humidity (H), dual spray (DS), chiller (C), back spray (BS), water immersion (W). Model (E) Q-SUN testers feature dual touchscreen displays and improved irradiance/lamp efficiency.
- 2) Model Xe-3-HDSE has a separate water reservoir that requires additional floor space (not shown in picture).
- 3) Achievable test conditions, including maximum and minimum setpoints and transitions between steps, are influenced by laboratory ambient conditions and interdependencies between test parameters.
- 4) CAT control is optional on Xe-1-BE and S models; BP/CAT can only be controlled simultaneously on Xe-2 and Xe-3 models.
- 5) The Xe-1 and Xe-3 specimen capacity shown is without specimen holders. Xe-2 specimen capacity is shown with specimen holders. Add one additional specimen to Xe-1 specimen capacity if CAT is used in place of BP/IBP.
- 6) Maximum specimen weight listed is for when the specimen tray is used. If the specimen tray is removed from the Xe-3, the chamber floor can hold evenly distributed specimens with a weight of 90 kg (200 lbs) max.
- 7) Maintain pH 6-8. For best performance, use a reverse osmosis/deionization (RO/DI) system for all S models.
- 8) Spray consumption applies to all S models; humidifier consumption applies to all H models. Water consumption values are greatly dependent upon test and lab conditions, and software settings. Values shown are typical for many common standards.
- 9) Rear Xe-3 vent duct is easily removed to reduce the depth from 99 cm (39 in) to 88 cm (34.5 in) to fit through small doors.
- 10) Actual shipping weights will be higher, depending upon model and whether the shipment is domestic, ocean or air.
- 11) Voltages shown are ± 10% and 50/60 Hz.
- 12) Operating outside these conditions can result in temperature, humidity, or other faults. Never operate in laboratory ambient conditions >36 °C or >80% RH.

## Warranty

For important warranty information, visit [Q-Lab.com/Warranty](https://www.q-lab.com/Warranty).



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