



# 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 three different models: the tabletop Xe-1, and full-sized Xe-2 and Xe-3. 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>	◐	—	—

● Standard   ◐ Optional   — Not Available

## Optical Filters and Radiometers

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>A,B,C</sup>			Xe-2 Irradiance Values Typical (& Maximum) <sup>A,B,C</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>D</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>D</sup></b>	0.68 (1.10)			0.68 (0.80)		
<b>Extended UV (-Q/B, -Quartz<sup>E</sup>)</b>				0.51 (0.61) <sup>F</sup>		
<b>Daylight-B/B<sup>D</sup></b>				70 (80)		
<b>Window (-Q, -B/SL)</b>	0.55 (0.85)			70 (108)		
<b>Window (-SF5, -IR, -B04<sup>G</sup>)</b>	-	42 (68)	-	42 (62)		

### Notes:

A: Minimum irradiance 0.25 @340nm, 0.45 @420nm, and 20 @TUV.

B: Typical irradiance that can be obtained by using the X-1800+ or X-1850+ lamp with a lamp life of 3000 hours.

C: Maximum irradiance that can be obtained by using the X-1800+ or X-1850+ lamp with a lamp life of 1000 hours.

D: 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.

E: Xe-1 and Xe-3 only.

F: In addition to the standard 1,000 and 3,000 hour warranties for Maximum and Typical irradiance values shown, Q-Lab will also guarantee 2000 hours at 0.55 W/m<sup>2</sup>/nm.

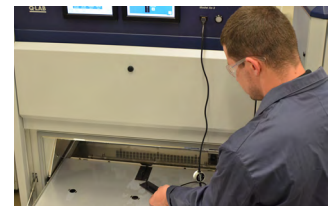
G: Xe-2 only.

## 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 <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
<b>Black Panel Temp<sup>3</sup> (°C)</b>												
Light Cycle	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 Cycle 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 Cycle	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 Cycle	—	—	—	—	35-55	35-55	—	—	—	—	—	—
Dark+Immersion Cycle	—	—	—	—	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>	
Light Cycle (any filter)	35-55		15-55		—		35-65		35-65		25-65	
Dark Cycle	30-45		10-40		—		25-45		25-50		15-50	
<b>Relative Humidity<sup>3</sup></b>	N/A						20-95%					
<b>Specimen Area</b>	25x46 cm (dxw) (9.9x18.0 in)				22x42 cm (dxw) (8.8x16.5 in)		30x25 cm (hxdia) (11.9x9.8 in)		45x72 cm (dxw) (17.8x28.3 in)			
<b>Specimen Capacity<sup>5</sup> (qty @ size)</b>	17 @ 51x102 mm (2x4 in)				15 @ 51x102 mm (2x4 in)		31 @ 45x132 mm (1.8x5.2 in)		55 @ 51x102 mm (2x4 in)			
<b>Total Specimen Weight (distributed evenly)</b>	14 kg (30 lbs) max						4.5 kg (10 lbs) max		23 kg (50 lbs) max <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		0.001 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		44 L/day	
<b>External Dimensions<sup>9</sup> (w x h x d)</b>	78x52x65 cm (31x21x26 in)		78x138x79 cm (31x55x31 in) <i>Xe-1 &amp; Chiller</i>		99x72x65 cm (39x28x26 in)		91x166x69 cm (36x66x27 in)		91x178x99 cm (36x70x39 in)		78x94x94 cm (31x37x37 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>	208V (230V)		1-Φ @ 12A (11A)		1-Φ @ 19A (16A)		1-Φ @ 13A (12A)		1-Φ @ 24A (23A)		3-Φ @ 39A (39A)	
	400V		—		—		—		—		3-Φ @ 26A	

### Notes:

- 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.
- Model Xe-3-HDSE has a separate water reservoir that requires additional floor space (not shown in picture).
- Min and max black panel (BP), insulated black panel (IBP; also known as black standard thermometer, or BST), chamber air temperatures (CAT), and relative humidity capabilities are dependent on ambient lab conditions. Interdependencies between these parameters limit achievable operating conditions in the tester.
- 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.
- 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.
- 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.
- Maintain pH 6-8. For best performance, use a reverse osmosis/deionization (RO/DI) system for all S models.
- 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.
- 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.
- Actual shipping weights will be higher, depending upon model and whether the shipment is domestic, ocean or air.
- Voltages shown are +/-10% and 50/60 Hz.

## Warranty

The Q-SUN xenon test chamber is guaranteed against defects in workmanship or materials for one year. Liability is limited to replacing or repairing any part or parts which are defective in materials or workmanship and are returned to our factory, shipping costs prepaid. Liability in all events is limited to the purchase price paid. Damage due to accident or abuse is not covered. Labor and travel costs are not covered. Q-Lab makes no other warranties, including implied warranties of merchantability or fitness for a particular purpose, except as may be expressly provided by Q-Lab in writing. Q-Lab shall not be liable for any incidental, consequential, special, or contingent damages arising out of the sale or use of any product.



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