

QUV Accelerated Weathering Tester



Overview

Sunlight, heat, and moisture cause millions of dollars of material damage every year. The QUV® accelerated weathering tester exposes materials to alternating cycles of UV light and moisture at controlled, elevated temperatures. In a few days or weeks, QUV testers can reproduce the damage that occurs over months or years outdoors. And with its newest model, QUV testers can now reproduce the damage caused by 254 nm UVC light used in sterilization equipment. With thousands of testers in service worldwide, the QUV tester is the world's most widely-used weathering tester.

QUV testers are available in five different models: QUV/basic, QUV/se, QUV/spray, QUV/cw, and QUV/uvc. Each air-cooled tester features Q-Lab's renowned reliability and ease of maintenance. All testers have standard datalogging via ethernet and/or USB, a variety of standard sample holders, automatic fault recognition and alarms, automatic shut-down timer, and a remarkably simple dual touchscreen user interface available in 17 languages.

	basic	se	spray	cw	uvc
SOLAR EYE® Irradiance Control²	—	●	●	●	●
Uninsulated Black Panel (BP) Temp. Control	●	●	●	●	●
Insulated Black Panel (IBP) Temp. Control³	◐	◐	◐	◐	◐
Condensation	●	●	●	●	—
Water Spray	—	—	●	—	—
Near-Room-Temperature BP Control	—	—	—	—	●
Adjustable 3D Specimen Holder Boxes¹	◐	◐	◐	◐	◐
Space Saver Frame for Stacking⁴	◐	◐	◐	◐	◐
Water Repurification System	—	—	◐	—	—

● Standard Feature ◐ Optional Feature

- 1) See the [QUV Specimen Mounting Guide](#) for more information on other standard and custom specimen mounting holder options.
- 2) See the [Universal Calibrator \(UC\) System](#) for information about SOLAR EYE Irradiance Control calibration.
- 3) Black Panel (BP) temperature control is standard. IBP control recommended for use with plastic specimens and/or 3D specimen holder boxes.
- 4) See [QUV \(and QCT\) Space Saver Frames for more information](#).

Lamps & Irradiance Control

The SOLAR EYE® irradiance control system (used in all models except QUV/basic) continuously monitors and precisely maintains irradiance by adjusting power to the lamps. Irradiance control is very important because changes in light intensity may affect both speed and type of material degradation. The QUV/basic model relies on lamp rotation to approximate controlled irradiance levels.

Models with irradiance control feature programmable setpoints. For example, with UVA-340 lamps, an irradiance of 0.89 W/m²/nm@340 nm is a good match with noon summer sunlight. For faster results, the QUV tester can operate at about double the irradiance of noon summer sunlight. See below for some common set points and [LU-8160 A Choice of Lamps for the QUV](#) for more information about selecting lamps for your application.

Irradiance Set Points	Warranty ^{1,5}	UVGI	Extraterrestrial			Daylight		Window	Total UV	Indoor
		UVC-254 ²	UVB-313EL	UVB-313EL+ ³	QFS-40	UVA-340	UVA-340+ ⁴	UVA-351	TUV-421 ^{2,3}	Cool White ²
Minimum	Reference	1.0	0.20	0.35	0.20	0.20	0.35	0.20	30	2.0
Low	1,000 hours	1.1-1.9	0.40-0.47	0.40-0.47	0.30-0.43	0.40-0.59	0.60-0.74	0.35-0.59	60 ⁵	3.0-3.9
Typical	8,000 hours	2.0-6.0	0.48-0.62	0.48-0.95	0.44-0.52	0.60-0.90	0.75-0.95	0.60-0.80		4.0-5.9
High	2,500 hours	6.1-10.0	0.63-0.95	0.96-1.70	0.53-0.70	0.91-1.25	0.96-1.85	0.81-1.25		6.0-10.0
Maximum	Reference	13.0	1.23	2.04	0.86	1.54	2.04	1.54	75	20.0

- 1) Irradiance values less than "Low" and greater than "High" (including Minimum and Maximum reference values) are not warranted. For important warranty information, visit Q-Lab.com/Warranty.
- 2) Values above are in units of W/m²/nm, except for UVC-254 (mW/cm²), TUV-421 (W/m² TUV), and Cool White (kLux).
- 3) UVB-313EL+ and TUV-421 lamps must be calibrated using the Universal Calibrator system. They cannot be calibrated with a CR10.
- 4) Some older QUV/basic testers may require an upgrade to work properly with UVA-340+ lamps. Contact Q-Lab Repair for details.
- 5) Warranty for TUV-421 lamps at the Irradiance indicated is 2,000 hours.

Irradiance Calibrations

The QUV SOLAR EYE irradiance control system and on-board sensors can be calibrated quickly and inexpensively using the Universal Calibrator (UC) system. ISO 17025-accredited smart sensors can be connected directly to the dual touchscreen display, dramatically simplifying the calibration process and lowers operating costs for users (see the [Universal Calibrator \(UC\) System](#) for more information).



QUV Tester Operating Specifications:

Models	basic	se	spray	cw	uvc
Specimen Orientation	75° from horizontal				
UV Fluorescent Lamps	Quantity: 8 (T12 × 121 cm long) @ 40 W ea				
Onboard Irradiance Sensor	—	Wideband (250-400 nm)	Wideband (250-400 nm)	Broadband (300-800 nm)	Narrowband (254 nm)
Black Panel Temp¹ Light Condensation	35-80 °C 40-60 °C	35-80 °C 40-60 °C	35-80 °C 40-60 °C	35-80 °C — ²	28-73 °C — ³
Specimen Exposure Area	20 × 50 cm (2× front side) 20 × 108 cm (1× rear side) 4160 cm ² total	20 × 50 cm (2× each side) 20 × 50 cm (2× each side) 4000 cm ² total			
Specimen Capacity⁴	50 Specimens (75 × 150 mm)	48 Specimens (75 × 150 mm)			
Inlet Water Pressure	0.2-5.5 bar (2-80 psi)	0.2-5.5 bar (2-80 psi)	2.8-5.5 bar (40-80 psi) ⁵	0.2-5.5 bar (2-80 psi) ²	— ³
Inlet Water Purity⁶	Tap Water	Tap Water	> 200 kΩ·cm < 5 µS/cm < 2.5 ppm TDS 6-8 pH	Tap Water ²	— ³
Water Consumption⁷ Condensation Spray	5 L/day —	5 L/day —	5 L/day 7 L/minute	5 L/day ² — ²	— ³ — ³
External Dimensions (w × h × d)	137 × 135 × 53 cm (54 × 53 × 21 in)				
Weight⁸	136 kg (300 lbs)				
Electrical Requirements⁹	120 V ± 10 %, 1-Φ 50/60 Hz, 14 A 230 V ± 10 %, 1-Φ 50/60 Hz, 7 A	120 V ± 10 %, 1-Φ 50/60 Hz, 16 A 230 V ± 10 %, 1-Φ 50/60 Hz, 8 A			
Lab Recommendations¹⁰ Temperature Relative Humidity	23 ± 5 °C 50 ± 25 %				

- 1) Achievable test conditions, including maximum and minimum setpoints and transitions between steps, are influenced by laboratory ambient conditions, specimen types, mounting techniques, and interdependencies between test parameters. Thus, not all listed setpoint combinations may necessarily be achievable.
- 2) The QUV/cw model is able to perform condensation cycles; however, this is not usually applicable for testing indoor materials.
- 3) The QUV/uvc model does not allow for condensation or water spray. It also features a high-powered blower for near-room-temperature BP testing capabilities, to best replicate conditions experienced during UVC sterilization efforts.
- 4) Other specimen sizes and shapes (including three-dimensional specimens) are readily accommodated in standard or custom specimen holders (see [QUV Specimen Mounting Guide](#)).
- 5) Optional booster pump (X-10570-K) is available.
- 6) Water purity requirements can be met by most reverse osmosis, deionization, or distillation systems.
- 7) Water consumption values are dependent upon test and lab conditions. Values shown are maximum for many common standards. To reduce water consumption during spray cycles, consider an optional water repurification system (see [Water Repurification Systems for QUV and Q-SUN Test Chambers with Water Spray](#) for more information).
- 8) Actual shipping weights will be higher and depend upon whether the shipment is domestic, ocean, or air.
- 9) Transformer kits available for 100 V (part number V-149-K-INST) or 200 V (part number V-149.1-K-INST) operation.
- 10) 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.



For sales, technical, or repair support, please visit:

Q-Lab.com/support

Westlake, Ohio USA • Homestead, Florida USA • Wittmann, Arizona USA
Bolton, England • Saarbrücken, Germany • Shanghai, China