

LAMPS

Superior lamps and filters for the most accurate simulation of natural daylight or daylight through window glass

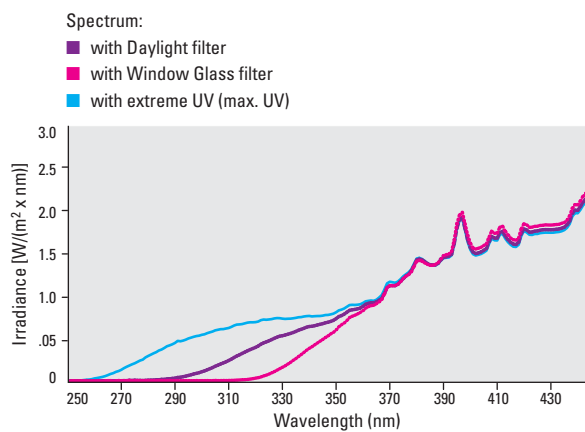
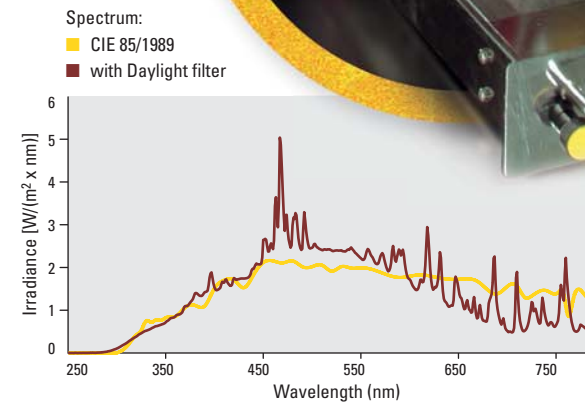
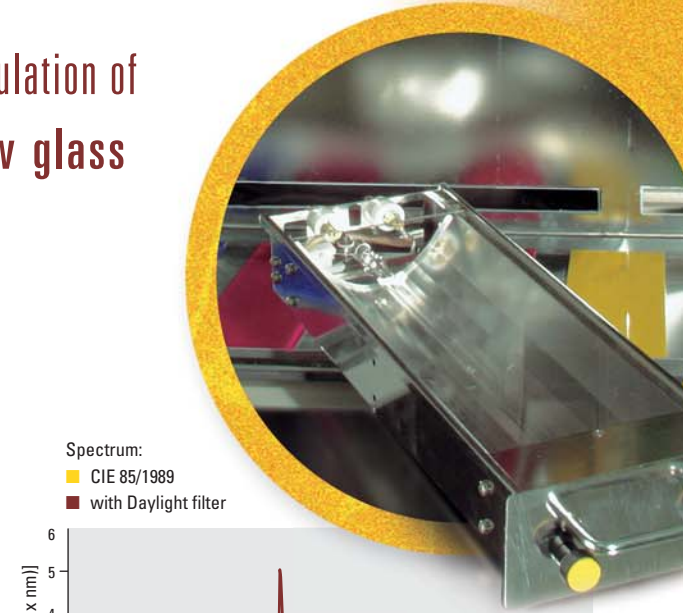
Atlas has mastered the art and science of solar simulation using xenon lamp technology.

The spectral output of xenon lamps closely matches the spectral distribution of global solar radiation in the UV and visible wavelength range, and contains a considerable amount of infrared and radiation below the cut-on of solar radiation. Xenon lamps, therefore, need to be properly filtered to eliminate the unwanted radiation to most closely simulate the irradiance in your product's end use environment.

SUNTEST lamps are air cooled and can be combined with application specific flat or cylindrical filters. By combining different types of optical filters it is possible to produce different spectral power distributions as shown in the charts.

It is important to note that all xenon lamps are not alike. Atlas has designed its instrument-grade xenon lamps to deliver consistent, even irradiance and stable spectral power distribution. Other suppliers have specified general purpose lamps and power supplies (often used in photocopiers) that may cause unrealistic degradation in various materials and add additional variability to exposure conditions. Atlas recommends using only lamps specifically designed to simulate solar radiation for weathering purposes. SUNTEST lamps, power systems, and filters are of similar quality to those used in larger Atlas Xenotest air-cooled instruments.

All SUNTEST models offer a variety of different filter systems that are tailored to specific applications. The user can select between a coated quartz filter for lower temperatures and an uncoated one. In addition, auxiliary filters according to the table below are available.



Filter Selection Chart

Auxiliary Filters	UV Cut-on	Test Conditions
Daylight (Special UV Glass)	290 nm	For simulation of solar radiation outdoors
Solar Standard	290 nm	For simulation of solar radiation outdoors at optimized UV intensity Commonly used for photostability testing of sunscreens
Window Glass	320 nm	Exposure behind window glass to simulate indoor conditions
Solar ID 65 (Indoor Indirect Daylight)	320 nm	Exposure behind window glass – e.g. for photostability testing of pharmaceutical products according to ICH guideline “Photostability Testing of New Drug Substances and Products”

SPECIFICATIONS & STANDARDS

Utility Requirements

	XXL	XXL+	XLS	XLS+	CPS	CPS+
Mains voltage*	400 V ± 10%, 50/60 Hz		200-240 V, 50/60 Hz		200-240 V, 50/60 Hz	
Mains socket	3P/N/PE, CEE (32 A, 5pol., 6h)		CEE (32 A, 3pol., 6h), P/N/PE		P/N/PE	
Power consumption max.	12.1 kVA		3.1 kVA		2.1 kVA	
Nominal lamp power	1.7 kVA		2.2 kVA		1.5 kVA	
Nominal lamp current	13 A		16 A		14 A	
Max. lamp power	2.1 kVA		2.8 kVA		1.7 kVA	
Max. lamp current	16 A		19 A		14.5 A	
Cooling air requirement	3 x 150 m³/h max. (lamps) 200 m³/h max. (test chamber)		250 m³/h (lamp) 340 m³/h (test chamber)		300 m³/h max.	
Ultra pure water (spray)	N/A	1 l/min max.	N/A	N/A	N/A	
Ultra pure water (humidity)	N/A	4 l/h max.	N/A	N/A	N/A	

* other voltages on request

Physical Specifications

	XXL	XXL+	XLS	XLS+	CPS	CPS+
Instrument dimensions (WxDxH)	901 mm x 913 mm x 1720 mm		930 mm x 500 mm x 485 mm		780 mm x 350 mm x 350 mm	
Max. exposure area dimensions (WxD)	790 mm x 390 mm		330 mm x 330 mm		280 mm x 200 mm	
Specimens tray dimensions (WxD)	740 mm x 368 mm		330 mm x 330 mm		280 mm x 200 mm	
Floor weight	ca. 280 kg	ca. 290 kg	80 kg		29 kg	

Standards

	XXL/XXL+	XLS/XLS+/CPS/CPS+
AATCC	TM16 TM169	
ASTM	D6551 904 C1442 C1501 D3424 D3451 D4101 D4303 D4355 D4459 D4798 D5010 D5071 D5794 D6083 D6577 D6662 D6695 G151 G155	D3424 D5071 D6695 G151 G155
EPA/ASTM	E896	E896
ICH Guideline		Q1B Q5C
ISO	4049 7491 11341 4892-2 11431 11979-5 18909 4892-1	4049 7491 11431 11979-5 4892-1
Qualicoat	Qualicoat	Qualicoat

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We reserve the right to make changes to equipment and systems in response to advances in technology and modify parameters

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ATLAS
MATERIAL TESTING SOLUTIONS
Experience. The Atlas Difference.

SUNTEST

FLATBED XENON INSTRUMENTS

Reliable accelerated xenon exposure systems.

The SUNTEST family offers state-of-the-art, flatbed xenon exposure systems to test the long-term effects that light, heat and moisture will have on your products in their end-use environment. Since 1976 SUNTEST is the world's most used brand of flatbed xenon exposure systems.

These easy-to-use xenon instruments are perfect for screening new materials for various end use environments, for quality control on incoming materials and components, and to conduct routine testing during production.

Repeatable and reproducible monitoring and control of test parameters is the hallmark of Atlas instruments and the SUNTEST family lives up to that standard. Every SUNTEST instrument is designed to provide the most uniform irradiance from filtered xenon lamps specifically designed to closely simulate daylight. Atlas xenon lamps have proven to deliver more consistent daylight simulation over the life of the lamp than any other xenon light source.

The right instrument for your testing needs.

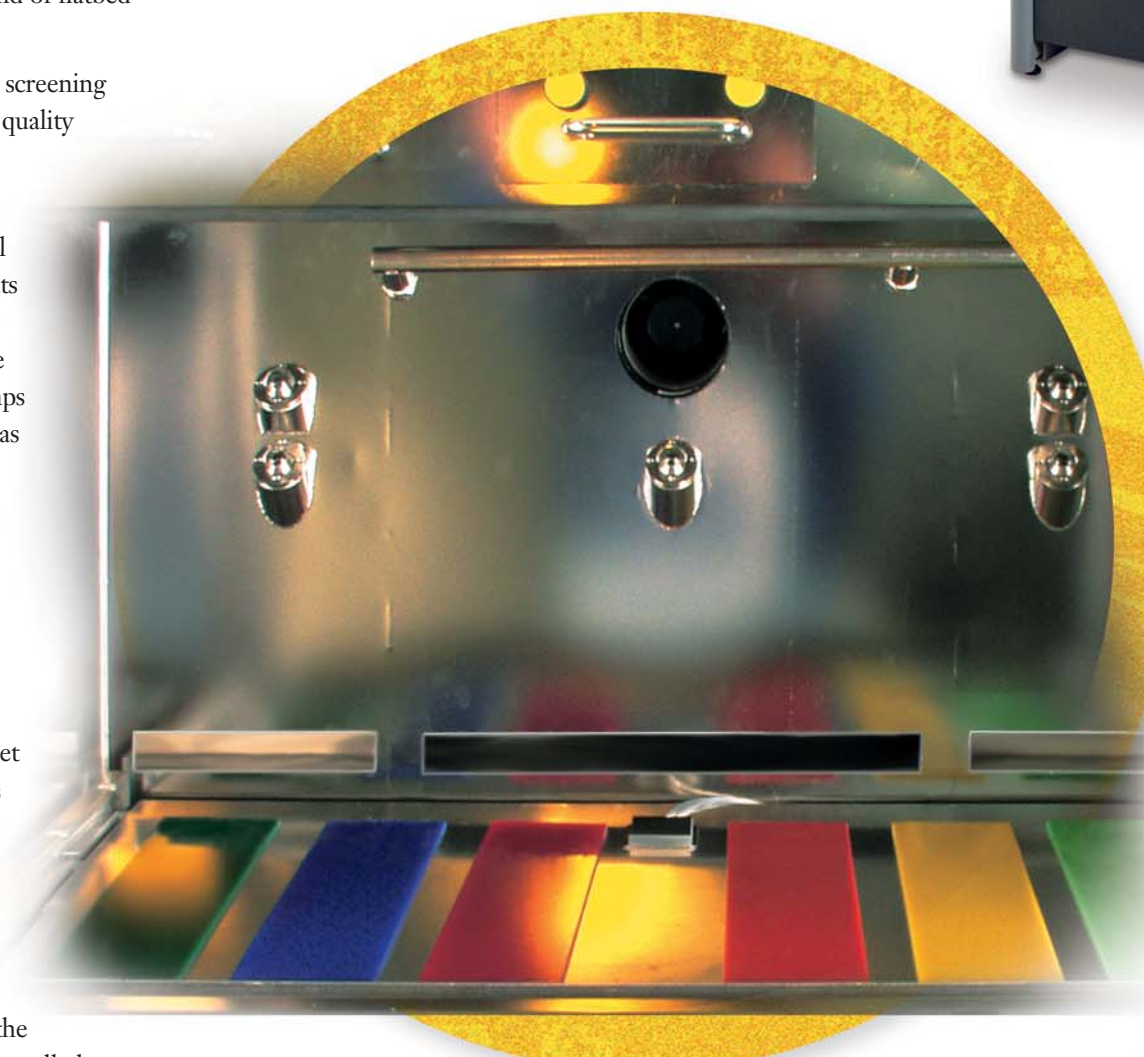
The SUNTEST family consists of three sizes to meet your capacity needs. Our small and mid-sized models offer a choice of manual control or microprocessor control. Our largest model, the XXL and XXL+, come with our easy-to-use color touch screen.

The right model for you is based on your volume of testing, the level of control required and available budget. The CPS+, XLS+ and the XXL/XXL+ use the Atlas microprocessor control package to deliver a controlled and reproducible test. The manual models of the CPS and XLS are an economic alternative offering basic manual control and the lowest priced xenon exposure systems.



XXL/XXL+

- 3,000 cm² exposure area
- Touch screen control and color display
- Monitoring and control of irradiance, relative humidity (XXL+ only), Black Standard Temperature (BST) or Black Panel Temperature (BPT) and Chamber Air Temperature (CHT)
- Irradiance control at 300 nm - 400 nm, 340 nm, or 420 nm
- Specimen spray (XXL+ only)



XLS+

- 980 cm² exposure area
- Keypad control system with 2-line LED display
- Monitoring and control of irradiance, Black Standard Temperature (BST) and monitoring and display of Chamber Air Temperature (CHT)
- Irradiance control at 300 nm - 800 nm



CPS+

- 560 cm² exposure area
- Keypad control system with 2-line LED display
- Monitoring and control of irradiance, Black Standard Temperature (BST) and monitoring and display of Chamber Air Temperature (CHT)
- Irradiance control at 300 nm - 800 nm



CPS/XLS

- Irradiance control at 300 nm - 800 nm
- Monitoring of irradiance and Black Standard Temperature (BST) with optional XenoCal sensors
- Manually adjustable irradiance



SUNTEST

CONTROL SYSTEMS

Proven control system provides
precise measurement and control of test parameters



Accurate and reliable monitoring
and control of test parameters.

XXL/XXL+

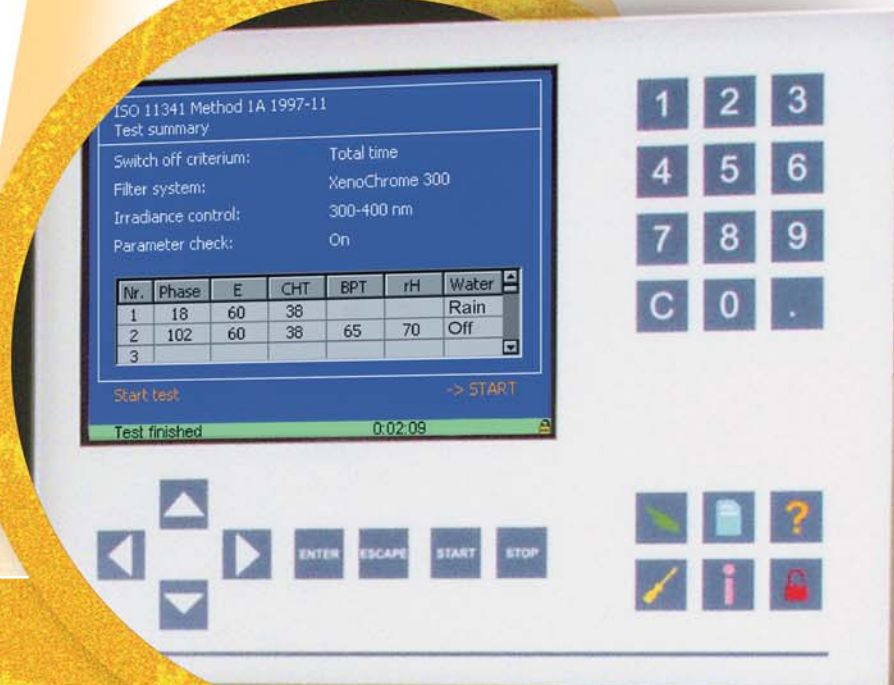
Touch screen control combines easy-to-use interface with state-of-the-art digital control for today's most advanced flatbed testing.

- Simplified programming with up to 10 user-programmable tests, each with as many as 12 phases. Dynamic disk space allows for the storage of at least 10 pre-programmed tests
- Real-time display of all test parameters and trend plot: irradiance, Black Standard Temperature (BST) or Black Panel Temperature (BPT) and Chamber Air Temperature (CHT)

- Controlled irradiance at 300 nm - 400 nm, 340 nm, or 420 nm

- Ability to simultaneously control BST or BPT, CHT and Relative Humidity (RH)

- User interface allows for improved diagnostics and user calibration of irradiance and BST



CPS+/XLS+

The keypad control of these instruments delivers proven microprocessor control and monitoring of all test parameters.

- Clearly arranged operating and control elements with arrow keys for fast and easy scrolling
- Keypad control interface with two-line display
- Controlled irradiance at 300 nm - 800 nm
- Storage capacity for up to 6 user-programmed tests with up to 6 phases each
- Continuous display of test parameters, irradiance, Black Standard Temperature (BST) and Chamber Air Temperature (CHT)
- Calibration and adjustment of irradiance and BST can be performed by user
- Measurement and control of BST at surface plane between 35 °C and 100 °C



CPS/XLS

The CPS and XLS are an economical solution for those who require the best, filtered xenon daylight simulation at the industries' lowest costs.

- Controlled irradiance at 300 nm - 800 nm
- Infinitely variable irradiance via control knob
- Integrated hour counter to monitor total operating time



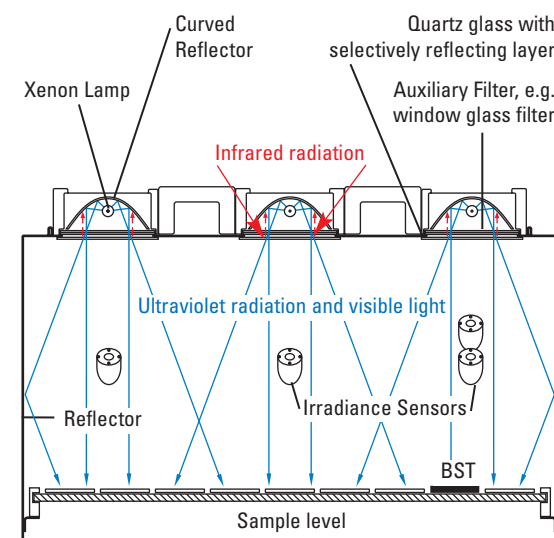
Superior chamber design to meet your testing needs

The SUNTEST XXL/XXL+ is our largest and only freestanding, flatbed instrument.

The 3000 cm² specimen tray is perfect for high volume testing and testing of large components and three dimensional parts. Standard sample holders for flat samples guarantee maximum throughput.

The exposure area has a slope of 5° to most accurately simulate outdoor testing and rain run off from sample surfaces.

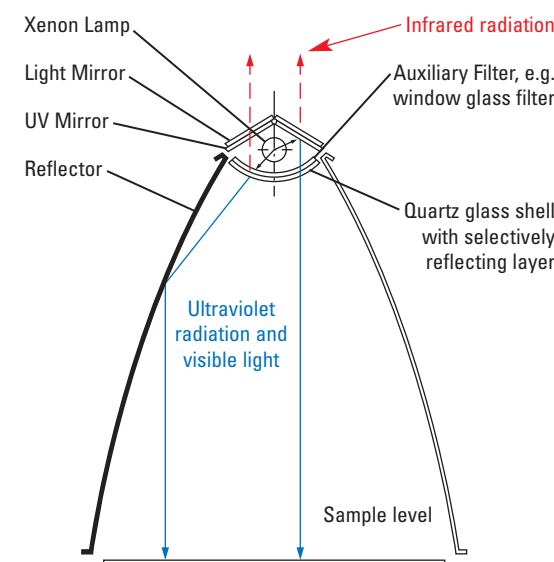
CROSS SECTION: XXL/XXL+
Test chamber and lighting system



XLS/XLS+

With 960 cm² of exposure area, the XLS is a perfect size for labs that don't have the need for the capacity of the XXL. This benchtop instrument has a removable, horizontal specimen tray that can handle many 3 dimensional products and components.

CROSS SECTION: XLS/XLS+/CPS/CPS+
Test chamber and lighting system



CPS/CPS+

This economical xenon test instrument is the smallest of the SUNTEST family with 560 cm² of exposure area. It is equipped with a flat specimen tray and is perfect for companies on a limited budget or for companies that occasionally have the need to test.

Optional features extend the test capabilities of the SUNTEST Family

Immersion unit for simulated weathering tests (CPS+ and XLS+)

- Allows for immersion of samples, such as paints or plastics to simulate exposure to moisture
- Immersion intervals selectable between 1 and 999 minutes
- Continuous flooding
- Water temperature control from 30 °C to 50 °C
- Water level indicator

Water-cooled sample table for contact cooling (CPS/CPS+ and XLS/XLS+)

- Allows for uniform cooling of samples through direct contact with the cooling surface
- Recommended for exposure of thermosensitive substances, such as agrochemicals or plastic foils
- Frequently used for testing cosmetics and pharmaceutical samples
- Easily interchangeable special sample table with tap water cooling

XenoCal Irradiance sensor

- For irradiance calibration and measurement at the sample plane
- Evaluation and graphical display of measured values on a PC by means of the XenoSoft analytical software
- Sensors available with different wavelength sensitivities: XenoCal BB 300-400 (XXL/XXL+), XenoCal WB 300-800 (XLS/XLS+ and CPS/CPS+) or narrow band sensors for 340 nm or 420 nm (XXL/XXL+)

XenoCal BST and XenoCal WST sensor

- For temperature calibration and measurement at the sample plane of Black Standard Temperature (BST) and measurement only of White Standard Temperature (WST)
- Evaluation and graphical display of measured values on a PC by means of the XenoSoft analytical software

Chiller for exposing thermosensitive materials (CPS/CPS+ and XLS/XLS+)

- Recommended when testing the photostability of pharmaceutical and cosmetic products
- Fresh air temperature cooling and control
- Reduction of the BST by up to 13 °C (depending on unit and laboratory conditions)
- CFC-free refrigerants

Features

	XXL	XXL+	XLS	XLS+	CPS	CPS+
Air-cooled xenon lamp (number)	3	3	1	1	1	1
Maximum exposure area	3081 cm ²	3081 cm ²	1089 cm ²	1089 cm ²	560 cm ²	560 cm ²
Measurement and control of irradiance	●	●	●	●	●	●
Irradiance control range*	Daylight filter		Window Glass Filter			
300 - 400 nm	40-65 W/m ²	30-65 W/m ²	●	●	N/A	N/A
340 nm	0.34-0.62 W/m ²	0.26-0.56 W/m ²	●	●	N/A	N/A
420 nm	0.75-1.45 W/m ²	0.65-1.30 W/m ²	●	●	N/A	N/A
300 - 800 nm	250-765 W/m ²	250-765 W/m ²	N/A	N/A	●	●
Infinitely variable irradiance via control knob	N/A	N/A	●	N/A	●	N/A
Irradiance display	●	●	N/A	●	N/A	●
Simultaneous control of BST and CHT	●	●	N/A	N/A	N/A	N/A
Measuring, control and display of Black Standard Temperature (BST)	●	●	N/A	●	N/A	●
BST Measuring Range	45-100 °C	45-100 °C	N/A	30-90 °C	N/A	35-100 °C
Control of test chamber temperature*	up to 70 °C	up to 70 °C	N/A	N/A	N/A	N/A
Measuring and display of test chamber temperature	●	●	N/A	●	N/A	●
Measurement and control of relative humidity*	N/A	up to 95%	N/A	N/A	N/A	N/A
Ultrasonic humidification system	N/A	●	N/A	N/A	N/A	N/A
Specimen spray system	N/A	●	N/A	N/A	N/A	N/A
Microprocessor-based control interface	●	●	N/A	●	N/A	●
Two-line display of current program and test parameters	N/A	N/A	N/A	●	N/A	●
Touch screen panel and display	●	●	N/A	N/A	N/A	N/A
Serial interface for continuous data logging	RS232/485	RS232/485	N/A	RS232/485	N/A	RS232/485
USB and SmartMedia interface	●	●	N/A	N/A	N/A	N/A
Ethernet	●	●	N/A	N/A	N/A	N/A
XenoCal sensors to measure and calibrate irradiance	■	■	■	■	■	■
XenoCal sensor to measure and calibrate BST	■	■	measure only	■	measure only	■
Black Panel Thermometer (BPT)	■	■	N/A	N/A	N/A	N/A
BPT Measuring Range	■**	■**	N/A	N/A	N/A	N/A
Immersion unit	N/A	N/A	N/A	■	N/A	■
Chiller	N/A	N/A	■	■	■	■
Water-cooled sample table	N/A	N/A	■	■	■	■

* values achievable depend on chosen filter system, irradiance setting and environmental conditions

** Contact Atlas for BPT measuring range

● Standard ■ Optional

Temperature and humidity control (XXL+)

The diagram shows pairs of values for relative humidity (RH) and chamber air temperature (CHT) that can be achieved in the test chamber of the SUNTEST XXL+ at two different blower speeds. All data points within the field surrounded by the red or blue line are possible combinations of CHT and RH at the respective fan speed. The data points outside the marked region (e.g. CHT = 70 °C and RH = 85%) can't be realized. This diagram shows the huge variety of CHT/RH states that can be set and controlled in the SUNTEST XXL+. Virtually any combination of CHT and RH that is specified by xenon test standards are covered. This makes the SUNTEST XXL+ the most versatile and flexible test instrument in its class.

