ATLAS
MATERIAL TESTING SOLUTIONS

Ci3000+

Weather-Ometer® & Fade-Ometer®

Setting the Standard
for Xenon Weathering

Accelerating Your Expertise

AMETEK®
MEASUREMENT & CALIBRATION
TECHNOLOGIES

ATLAS
MATERIAL TESTING SOLUTIONS

ACCELERATING YOUR EXPERTISE

The Atlas Vision

Shaping the future of the materials testing world in partnership with our customers.

The Atlas Mission

Our mission is to help our customers worldwide provide the most reliable and durable product solutions through our combined experience and expertise in weathering instruments and testing, custom capabilities, consulting and global support.

Focused On Your Goals

Atlas pioneers innovative ways for companies to test the weatherability of their products. From our industry-leading accelerated weathering equipment to the consulting services of our expert laboratory staff, our approach to the market is clear: Provide our customers with superior, easy-to-use technology and advanced testing solutions to determine how long their products will last. Every step of the way, Atlas is there - Accelerating Your Expertise.

Quality at Every Step

We take pride in our manufacturing. Every instrument must pass customer specified test parameters and we visually inspect all xenon lamps and optical filter glass per strict quality procedures. We test every instrument for material compliance before being shipped. The 3000 Series meets relevant CE, UL, CSA, ISO and EN safety and electrical standards for both machinery and laboratory test equipment.

Learn from the Experts*

Atlas offers hands-on courses to guide new users through the operation, calibration and maintenance of your Weather-Ometer. We make sure you know all of the instrument features to maximize the efficiency and effectiveness of your testing.

* Offer may differ by country

Making the Most Advanced Instruments Even Better

The Ci 3000 Series includes a simplified user interface and incredibly fast, fully-digital control system to produce the most reliable and efficient instrument we've ever made. It all adds up to the most advanced xenon weathering test instrument on the market.

Simplified Control Navigation

The digital control system makes access to its most sophisticated features available to operators. The 3000 Series delivers exceptionally precise and reliable control of all test parameters for repeatable, reproducible and reliable results.

More Capacity

The optional 2-tier rack design nearly doubles the sample exposure area, providing the best price to capacity ratio of all small rotating rack xenon-arc test instruments.

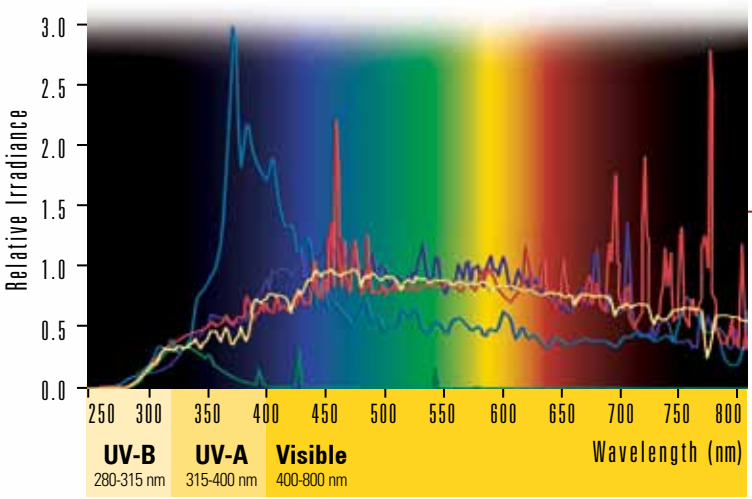
Which Light is Right?

Choosing the "right light" is one of the first steps in creating an accurate and reliable weathering test program. The 3000 Series simulates solar radiation using xenon lamps and advanced filter systems specifically designed for weathering. Atlas xenon lamps are developed exclusively for weathering to meet high performance criteria for their spectral power distribution, lifetime irradiance stability and lot-to-lot uniformity.

The 3000 Series uses interchangeable glass filters that tailor the xenon light spectrum to match light conditions in your products' end use environment.

Sunlight vs. Artificial Light Sources

A Comparison of Relative Spectral Power Distribution



- **Global Solar Radiation**
  Average Miami Sunlight 26° South Direct
- **Xenon Arc Lamp**
  As used in an Atlas Weather-Ometer® with Right Light™ filters
- **UVA-340 Fluorescent Lamp**
  Commonly used in the Atlas UVTest
- **Metal Halide**
  As used in the Solar Environmental Chambers (SEC)
- **Sunshine Carbon Arc**
  As used in an Atlas Weather-Ometer® with Corex D filters

Common Applications

The 3000 Series meets global weathering ar lightfastness test requirements. It is the wor standard for lightfastness testing and is used or approved by nearly all major US and European retailers.

The 3000 Series is perfectly suited for testin

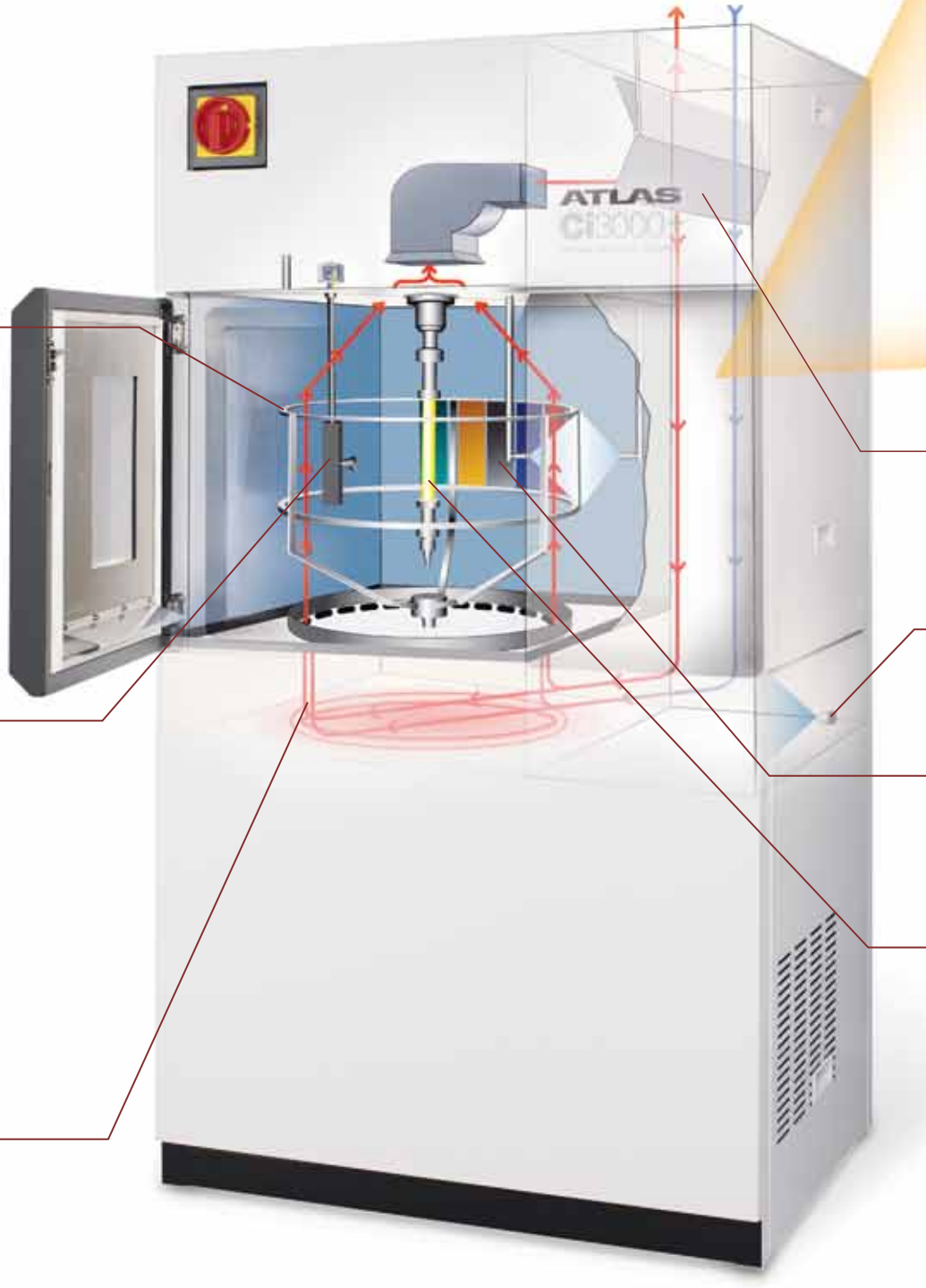
- **Textiles including Industrial and Geotextiles**
- **Pigments, Dyestuffs, Stabilizers and Additives**
- **Plastics**
- **Inks**
- **Paints and Coatings**
- **Packaging**
- **Automotive Materials**
- **Photovoltaics**

A Higher Order of Weathering Testing Performance Through Superior Science

The Ci3000+ Weather-Ometer® and Fade-Ometer®, with their advanced digital control systems, represent monumental achievements in applying digital and optical technologies in easy-to-use laboratory weathering instruments. The 3000 Series is approved by many OEMs in the textiles, paints & coatings and plastics industries as the exclusive platform to deliver accurate, reproducible and repeatable results for predicting service life. The 3000 Series has been certified CE, UL, CSA, ISO and EN compliant.

Two Rotating Sample Rack Options

The optional 2-tier rack system allows up to 60 total specimens to be exposed. The unique inclined shape of the rack maximizes irradiance and temperature uniformity across the entire sample surface area. The 2-tier rack can also be installed in any existing Ci3000 instrument.



Controlled Irradiance

Up to 2-sun levels or higher acceleration based on your test requirements. Narrow band (340 nm or 420 nm), broad band (300-400 nm) or illuminance control/Lux (400-750 nm) with optional monitoring at a second wavelength to meet global test requirements.

Test Chamber Temperature

Closely simulates your material's end use environment.

Intuitive User Touch Screen Interface

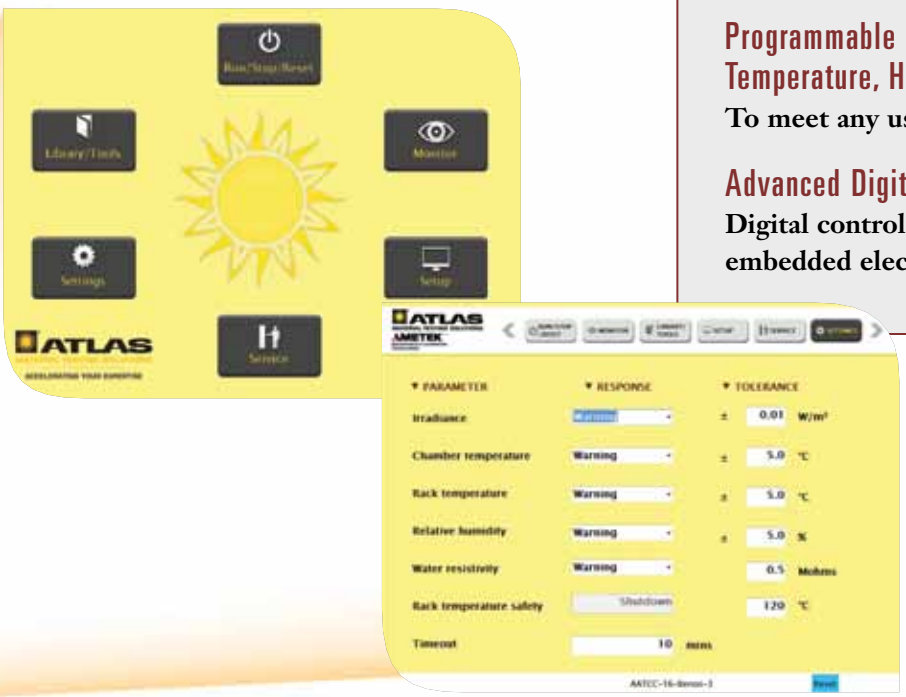
Increases functionality that makes the 3000 Series easy to program, monitor and calibrate.

Programmable Stepped Changes in Irradiance, Temperature, Humidity and Other Test Conditions

To meet any user defined test program or cycle.

Advanced Digital Control

Digital control with rugged, state-of-the-art embedded electronics.



Smart Damper

Reduces test variability in chamber temperature and humidity and compensates for changes in ambient laboratory conditions.

VibraSonic Humidity Control

Accurately replicates humidity levels to meet stringent global test requirements.

Black Panel Thermometer (BPT) or Black Standard Thermometer (BST)

Controls and monitors temperature at specimen level to ensure test repeatability.

Xenon Lamp Cooling System

The 3000 Series is equipped with a new, ground-breaking xenon lamp cooling system that dramatically reduces the amount of cooling water used.

Additional Features

Data Acquisition

Streaming data output in a format that can be read in real-time or stored onto a portable media. Connection sources include USB or Ethernet.

SmartLight Monitor

Verifies that the correct light capsule is installed.

Water Purity Notification

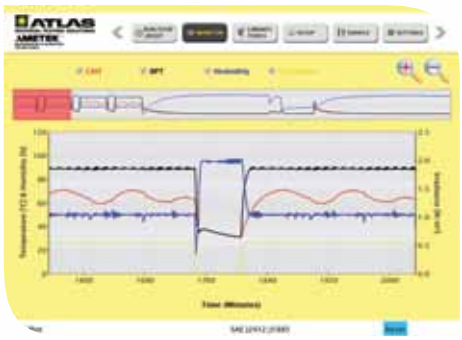
Signals when incoming water quality falls below the factory set point.

Enhanced Control System Enables Complex, Custom Test Programs or Simple, Preprogrammed Test Operation

Easy to Understand Icons Simplify Navigation

New icons make getting to the information you need fast and easy

- **Large, Touch Sensitive Buttons**
- **Clear, Easy-to-See Icons**



Two Simple-to-read Pages and On-screen Trend Plot Monitor All Critical Status Information

Monitor all critical set points and compare with real time readings for:

- **Rack Temperature: Black Panel Temperature (BPT), Black Standard Temperature (BST) or Both**
- **Chamber Temperature**
- **Relative Humidity**
- **Irradiance**
- **Incoming Deionized Water Quality**
- **Lamp Cooling Water Temperature**
- **Countdown in Time or Radiant Exposure**
- **Phase Type and Duration**

14 Factory Preprogrammed Test Methods*

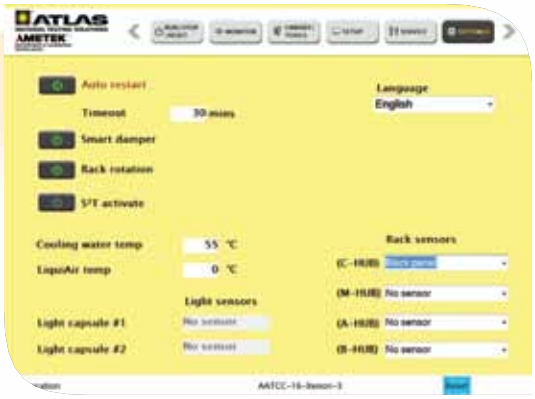
The test list includes:

AATCC	**ISO**	**JASO**
ASTM	**Ford**	**GM**
SAE	**VW**	

Space for 12 Custom Test Programs

Existing test methods can be copied and edited for custom applications

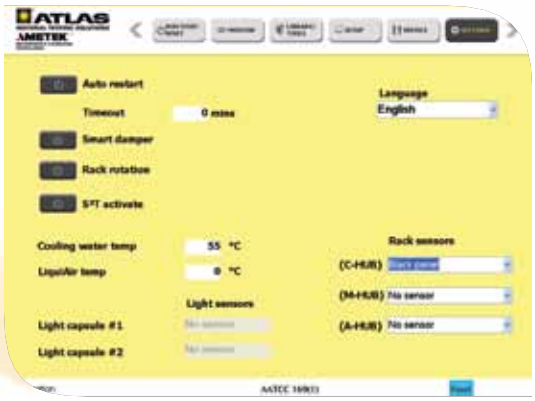
*** Fade-Ometer comes with 6 factory pre-programmed test methods**



Simplified Setup of Elective Control Features

Set variance level notification for critical variables on one screen:

- **Irradiance**
- **Chamber Temperature**
- **Rack Temperature (BPT, BST or both)**
- **Relative Humidity**



Multi-lingual Capability

Select the desired language:

- **English**
- **Chinese**
- **Japanese**
- **Korean**
- **German**
- **French**
- **Spanish**
- **Turkish**

New User Functionality

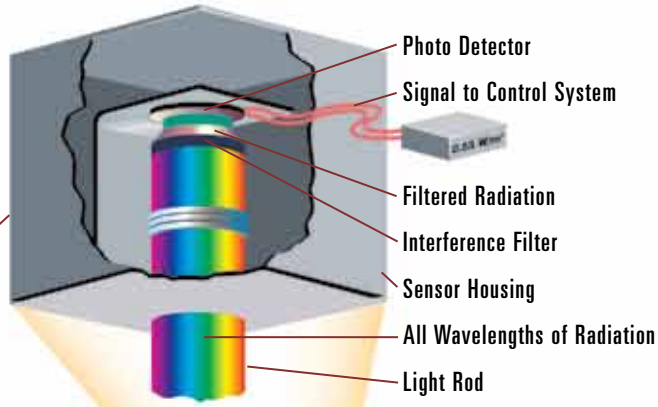
Sample Management:

- **Operators can keep track of multiple tests within the same Weather-Ometer® right on the user interface. Up to 10 individual sample sets can be tracked at once, either by time or by radiant dosage.**

E-mail Notification:

- **Your Weather-Ometer can alert you by e-mail when user define test conditions have been met.**

Long Arc Xenon is the Closest Simulation of UV, Visible and IR Solar Radiation



Intelligent Controlled Irradiance (Ci) System

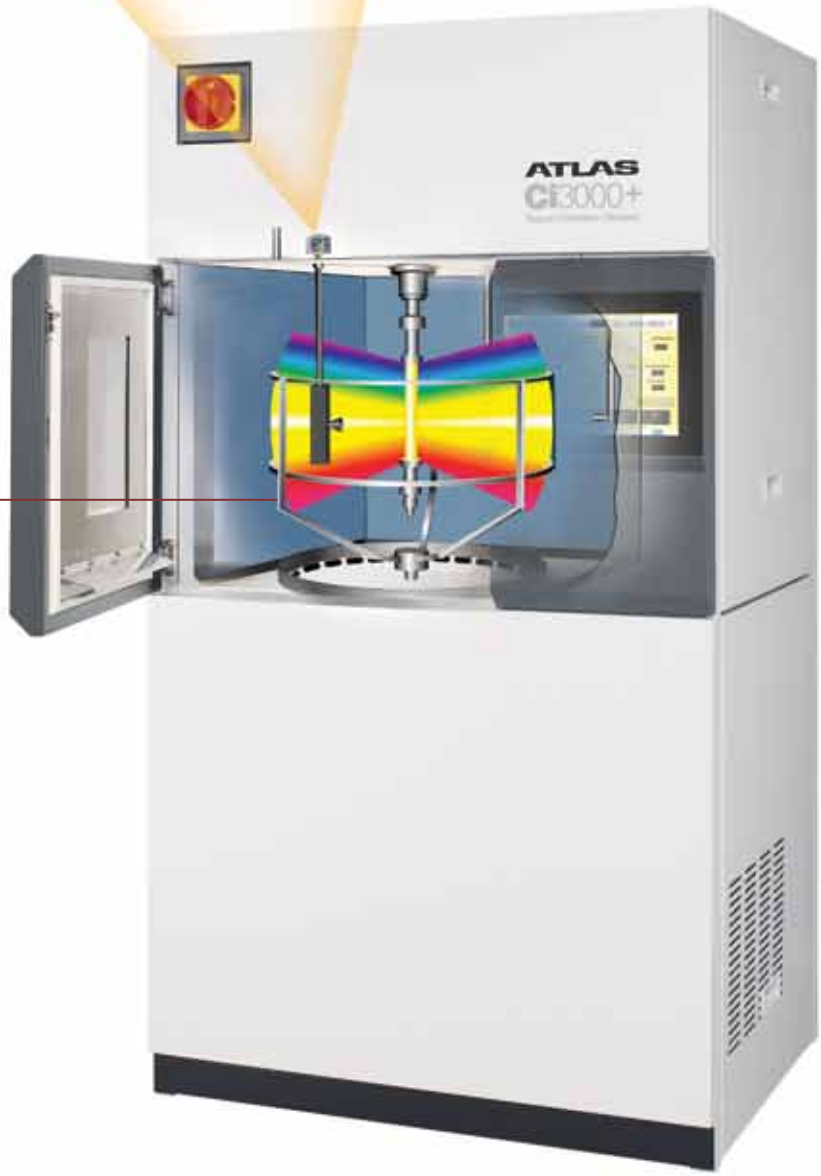
A closed loop system automatically adjusts lamp output in real-time delivering the most stable radiant exposure

- **Narrow band (340 nm or 420 nm), broad band (300-400 nm) or illuminance control/Lux (400-750 nm)**
- **Irradiance defined by user during test programming or by factory programmed test methods**
- **Intelligent control will only allow the user to select an irradiance that matches the defined test method**
- **Wattage regulating system**

Rotating Sample Rack

Inclined, rotating rack delivers the best exposure uniformity

- **Samples are rotated continuously during test. No need to manually rotate test samples**
- **Uniform specimen and chamber temperature, RH, irradiance and spray**
- **Allows for even and consistent airflow over sample surfaces**
- **Can accommodate three dimensional samples**
  - **Small Components**
  - **Finished Products**
  - **Bottles**



Filter Combinations		Test Conditions	Irradiance Ranges W/m²			
Inner	Outer		Wattage	300-400 nm	340 nm	420 nm
Right Light™	Quartz	Weathering tests requiring a precise match for solar cut-on, full spectrum match and/or cooler test temperatures	Min. 1800 W Max. 4500 W	48 180	0.49 1.77	0.95 3.34
Type S Boro	Type S Boro	Most common combination for weathering tests (Daylight filter system)	Min. 1800 W Max. 4500 W	40 151	0.35 1.33	0.85 3.08
Type S Boro	Soda Lime	Most common combination for lightfastness tests behind window glass	Min. 1800 W Max. 4500 W	35 136	0.28 1.12	0.83 3.09
Type S Boro	Soda Lime + Float Glass in Auxiliary Lantern	Common combination for testing European automotive interior trim materials (Requires lantern assembly)	Min. 1800 W Max. 4500 W	29 112	0.21 0.82	0.74 2.75
Quartz	Type S Boro	Weathering tests with somewhat more and shorter UV than sunlight	Min. 1800 W Max. 4500 W	45 172	0.42 1.61	0.85 3.09
Quartz	Quartz	Testing with consistently more and shorter (unrealistic) UV than global solar radiation	Min. 1800 W Max. 4500 W	52 205	0.48 1.92	0.87 3.21
Quartz	Cira on Type S Boro	Weathering tests requiring full spectrum match and/or cooler test temperatures	Min. 1800 W Max. 4500 W	47 181	0.44 1.74	0.88 3.24

Sunlight Measurements		Irradiance Ranges W/m²				
		300-400 nm	340 nm	420 nm	300-800 nm	300-2450 nm
Average Optimum Natural Daylight	Measured 45° South cloudless Miami, FL	28	0.30	0.67	287	
Peak Natural Daylight	Measured solar noon on Vernal Equinox at normal incidence Miami, FL	66	0.70	1.53	617	
Peak Natural Daylight Standard	Defined for horizontal plane (0°) in CIE Publication No. 85 Table 4	69	0.68	1.50	669	1088

International Standards

The Ci3000+ Weather-Ometer® and Fade-Ometer® meet or exceed the following industry standards:

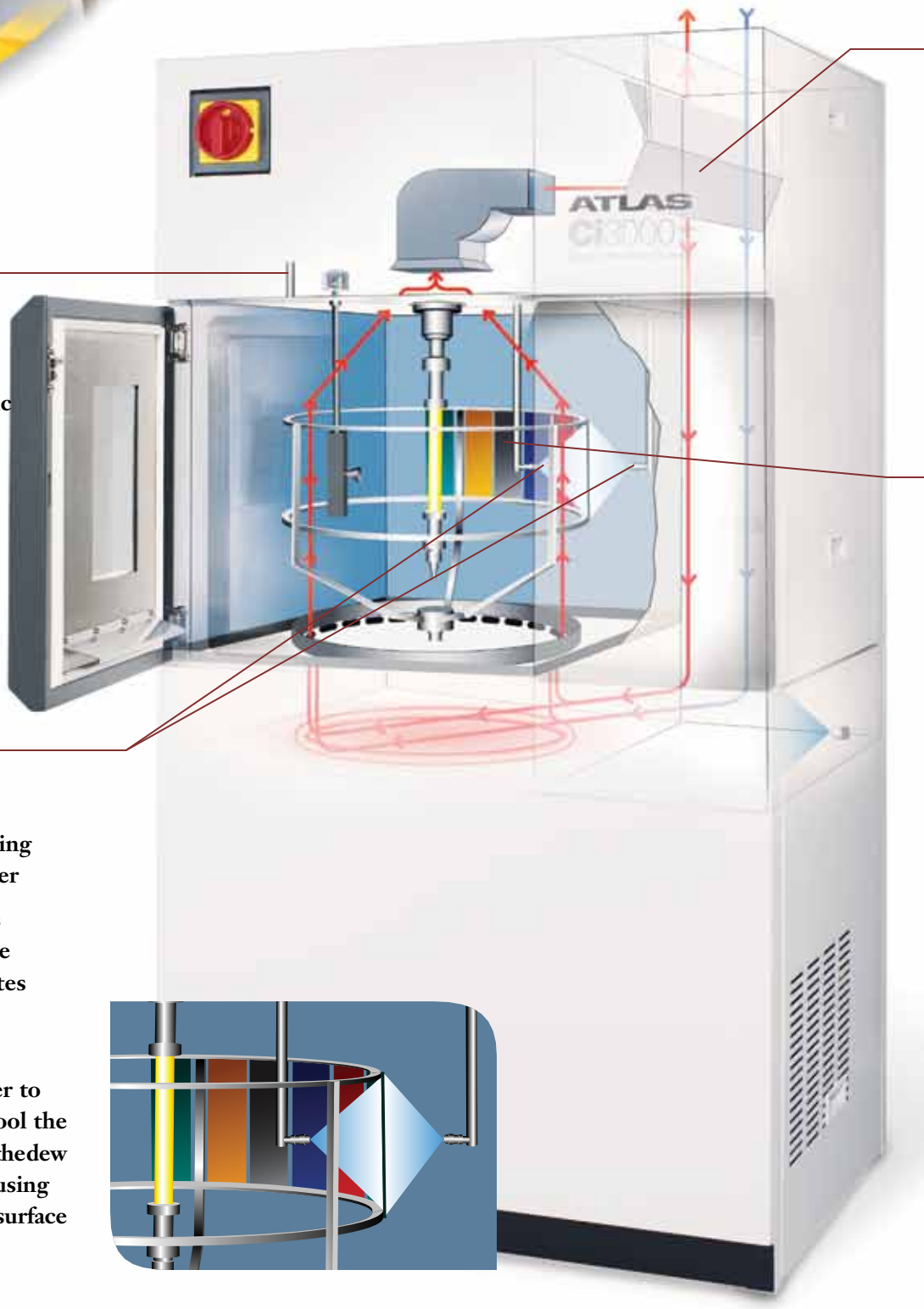
AATCC	TM 16.3-2012		TM 16E-1998		TM 169 ▲			
ASTM	C1442	C1501	D904	D3424	D3451	D4101	D4303	D4355
	D4459	D4798	D5010	D5071	D5794	D6083	D6551	D6577
	D6662	D6695	D7869	G151	G155			
GME	60292							
ISO	105-B02	105-B04▲	105-B06	105-B10	11341▲	3917▲	4892-1▲	4892-2▲
	12040	16474-1	16474-2					
JASO	M 346							
Marks & Spencer	C9	C9A						
MIL STD	810 G▲							
Peugeot/ Citroën (PSA)/ Renault	D47 1431▼							
SAE	J2412▲	J2527▲						
VDA	75202							
VW	PV 1303	PV 3929	PV 3930▲					

▲ Ci3000+ Weather-Ometer only ▼ Ci3000+ Fade-Ometer only

This is a sample of global standards that can be met by the Ci 3000 Series. For more information on additional or specific standards, contact your local Atlas representative. Standards are subject to change without notice. This might lead to the inclusion or exclusion of certain standards.

CLIMATE CONTROL

The 3000 Series Offers Thorough Climate Control to Best Replicate Your Materials' End Use Environment



Precise Humidity Control

The electronic sensor provides direct and accurate measurements of relative humidity and enables automatic control at the specimen level

- **10% RH to 75% RH in light cycles***
- **Up to 100% in dark cycles***

*** Dependent on other parameters such as lamp power, chamber temperature, ambient lab conditions, etc.**

Specimen and Rack Spray

Not available on the Ci3000+ Fade-Ometer®

Custom designed precision nozzles provide uniform spraying of samples with deionized water

- **The specimen spray applies water to the exposed surface of the sample which simulates rain to induce temperature shock and erosion effects**
- **The rack spray applies water to the back of the sample to cool the specimen temperature below the dew point during dark cycles causing condensation on the exposed surface**

TEMPERATURE CONTROL

Consistent, Controlled Temperature Delivers Repeatable and Reproducible Results

Smart Damper

- Balances test chamber temperature, BPT or BST and humidity levels and compensates for changes in ambient laboratory conditions
- Recirculates chamber air, introduces ambient air or a combination of the two

Black Panel Thermometer (BPT) or Black Standard Thermometer (BST)

- Controls and monitors temperature at specimen level to ensure test repeatability
- Control of one sensor type while simultaneously monitoring the other

BPT/BST Temperature vs. Chamber Temperature (CHT)

- BPT and BST sensors simulate an estimate of the maximum temperature on a sample's surface
- CHT measures the temperature of the air circulating within the chamber
- Controlling both sample and air temperature delivers superior repeatability and can closely match the samples end use environment

Simultaneous Control of BPT/BST and CHT

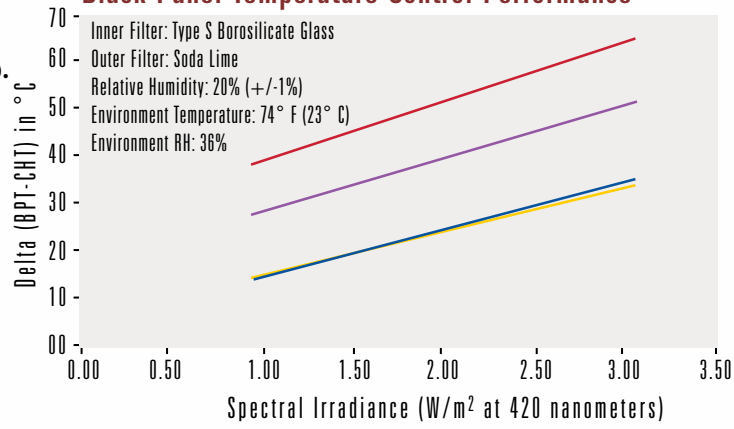
- Advanced PID algorithms allow for discrete manipulation of test parameters
- Smart Damper, variable speed blower and chamber heater are independently controlled
- Instrument performance envelope is optimized allowing maximum flexibility in custom test applications

Temperature and Humidity Control

Operable ranges of temperature control at various irradiance levels (under normal laboratory conditions).

- Minimum Delta BPT/CHT @ 45° C
- Minimum Delta BPT/CHT @ 60° C
- Maximum Delta BPT/CHT @ 45° C
- Maximum Delta BPT/CHT @ 60° C

Black Panel Temperature Control Performance



Optional Features and Accessories to Extend the Capabilities of Your Next Weather-Ometer® or Fade-Ometer®

Hybrid Cooling System

Improved xenon lamp cooling system dramatically reduces water consumption

- **Expanded LiquiAir options include onboard mounting**
- **Reduces water consumption up to 100%***

*** Dependent on options, ambient lab conditions, and test methods**

WXView ("Weather" View)

Our new WXView data acquisition program allows users to archive test data or monitor conditions remotely in real time.

- **All standard test parameters such as rack temperature, chamber temperature, % RH and irradiance**
- **Control parameters such as lamp power, fan speed, heater output, and damper position**
- **Convenient options allow user to save, print, or extract a snapshot of test data**
- **Automatic scaling of y-axes**
- **Magnify and demagnify functions**

Additional Options

Auxiliary Filter Lantern

For meeting special test requirements.

Two Rotating Sample Rack Options

The standard single tier maximizes exposure uniformity over all specimens, while the two tier option expands specimen capacity.

LS-200 Spectroradiometer

Allows for independent measurement of the spectral power distribution from 300 nm to 800 nm to verify conformance with performance based standards with convenient data output to a spreadsheet format.

XenoCal® Irradiance Calibration Device

- **For independent 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**
- **Available with different wavelength sensitivities:**
  - **XenoCal BB 300-400 nm**
  - **XenoCal NB 340 nm**
  - **XenoCal WB 300-800 nm**
  - **XenoCal NB 420 nm**

Sample Holders

This chart is a representative sample of specimen holders available for the Ci 3000 Series. For specific information about specimen holders that best meet your needs, please contact your local Atlas representative.

Holder Type (Part Number)	Application	Max. Size mm WxHxD	Exposure Size mm WxH	Capacity
RD-3T (20017900) Single or three exposure window w/"bulldog" clip	Coatings on various substrates, plastics, textiles, glass	77 x 152 x 10	57 x 134	20
SL-3T (19163900) Single exposure window w/spring clip back	Textiles, plastic film, automotive interior	67 x 145 x 3	50 x 121	20
SL-3T with Glass (07303900) Single exposure window w/glass and adjustable back	Textiles, paper, plastic film, carpet, automotive interior	67 x 145 x 15	50 x 121	20
CD-3T (20215700) Three exposure windows w/spring clip back	Textiles, paper, plastic film, automotive interior	67 x 145 x 3	3 windows: 38 x 50	20
CD-3T with Glass (07303800) Three exposure windows w/glass, spring clip back	Textiles, paper, plastic film, wood, automotive interior	67 x 145 x 15	3 windows: 38 x 50	20
TEX-3T with Mask (19186700) Single exposure window w/mask, adjustable	Textiles, foam, foam-backed materials	45 x 134 x 12	19 x 119	29
Polystyrene Reference Chip (19183400)	Polystyrene reference chips	50 x 88 x 2	43 x 82	20
4 x 6 Panel (19210200)	Coatings, rigid plastic, wood	104 x 155 x 12	101 x 146	14
3 x 6 Panel (19188501)	Coatings, rigid plastic, wood	76 x 152 x 9	76 x 146	17
Solar Panel (19190400)	Rigid plastic, roofing material, solar panels, wood	127 x 138 x 9	119 x 119	9
Adjustable Bottle (19178100)	Bottles, labels, printing inks, adhesives, liquids, pills	69 x 101 x 43	50 x 121	20

FEATURES & SPECIFICATIONS

Textile Industry Standard

The Ci3000 Series is the world standard for lightfastness testing and is used and approved by nearly all major US and European retailers. It is the only lightfastness instrument which meets AATCC 16E-1998, AATCC 16-2003, ISO 105 B02 and M&S C9 and C9A.

Standard Features

Full Color 12" Touch Screen Control Panel Display of All Test Parameters

- Direct Setting and Control of Irradiance
- Direct Setting and Control of BPT/BST
- Direct Setting and Control of Relative Humidity
- Direct Setting and Control of Specimen and Chamber Air Temperature
- Display of Diagnostic Messages
- 14 Factory Pre-Programmed Test Methods
- Space for 12 Custom Programs
- Multi-Language Capability (English, French, German, Spanish, Japanese, Chinese, Korean, Turkish)

SmartDamper

SmartLight Monitor

Choice of Continuous Light or Light/Dark Cycling (Ci3000+ Weather-Ometer® Only)

Streaming Data Output USB or Ethernet

Air Heater

Xenon Lamp Cooling System

Air Intake Dust Filter

Water Purity Indicator

Calibrated Xenon Reference Lamp

Chamber Viewing Door

316 Grade Stainless Steel Test Chamber

Universal Electrical Configurations to Meet Local Frequency, Voltage, and Electrical Requirements

Meets CE, UL, CSA, ISO and EN Compliance

Sample Management

E-mail Functionality

Optional Features

Auxiliary Lantern

LS-200 Full Spectrum Monitoring Device

Dual BPT and BST Measurement/Control Including BPT and BST Sensors

Monitoring of Second Wavelength

LiquiAir Self Contained Xenon Lamp Cooling System

XenoCal® Irradiance Calibration Device

Physical Dimensions

Height	183 cm (72 in)
Width	95 cm (37 in)
Depth	84 cm (33 in)
Floor Space	115 cm (45.4 in) x 240 cm (94.5 in) Including Access Area
Total Exposure Area	11000 cm²

Electrical Specifications

Wiring Connections	3 Phase, 3 Wire
Operating Voltage Range	200-240 VAC Phase to Phase
Maximum Current	47 Amps
Frequency	50/60 Hz
Maximum Power	8.5 kW
Wiring Connections	3 Phase, 4 Wire
Operating Voltage Range	200-240 VAC Phase to Neutral
Maximum Current	38 Amps
Frequency	50/60 Hz
Maximum Power	8.5 kW

Weight

Weight of Fully Skidded and Wrapped Ci3000	458 kg (1010 lbs)
Weight of Ci3000 without Skid	404 kg (890 lbs)

Water Consumption

Pressure	138-345 kPa (20-50 psi)	
Flow Rate (max*)	Deionized Water	Tap Water @18.5° C
Humidification	0.12 l/min	
Specimen Spray	0.07 l/min	
Rack Spray	0.07 l/min	
Xenon Lamp Cooling @ 2000W		1.1 l/min

BPT/BST Temperature Range

Black Panel Temperature Range	40-110 °C
Black Standard Temperature Range	40-110 °C

HVAC

Maximum	26.06 MJ/h (24703 BTU/h)

* Typical water usage will be less. Tap water requirements for lamp cooling with the LiquiAir system will be near zero.

** Not available on the Ci3000+ Fade-Ometer

ATLAS
MATERIAL TESTING SOLUTIONS

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Specifications, features and standards
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