Ci5000E

WEATHER-OMETER®





Powered Electronics
Testing Without
Compromise

ATLAS®
MATERIAL TESTING SOLUTIONS

AMETEK®

The Atlas Vision

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

The Atlas Mission

Our mission is to help customers worldwide deliver the most reliable and durable product solutions. We achieve this through our combined expertise in weathering instrumentation 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

Producing the very best instruments is not something we take lightly. Every instrument must pass customer-specified test parameters and we visually inspect all xenon lamps and optical filter glass per strict quality specifications. We test every instrument for material compliance before being shipped. The Ci5000E meets relevant CE, UL, CSA, ISO, EN and UKCA safety and electrical standards for both machinery and laboratory test equipment.

Learn from the Experts*

Your instrument purchase includes attendance to a free Weather-Ometer® Workshop. This hands-on course guides 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.

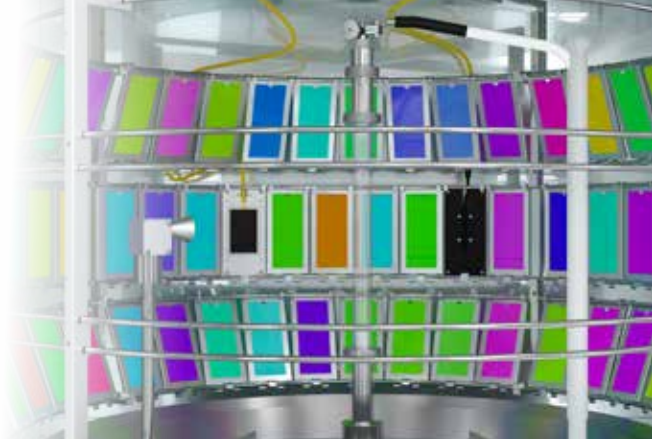
* Offer may differ by country

Making the Most Advanced Instruments Even Better

The Ci5000E includes a simplified operating system and an incredibly fast, fully-digital architecture to produce the most reliable and efficient instrument we've ever made. It all adds up to be the most advanced xenon weathering test instrument on the market.

Simplified Control Navigation

The large user interface makes operating the Weather-Ometer® easy. The Ci5000E delivers exceptionally precise and reliable control of all test parameters for repeatable, reproducible and reliable results.



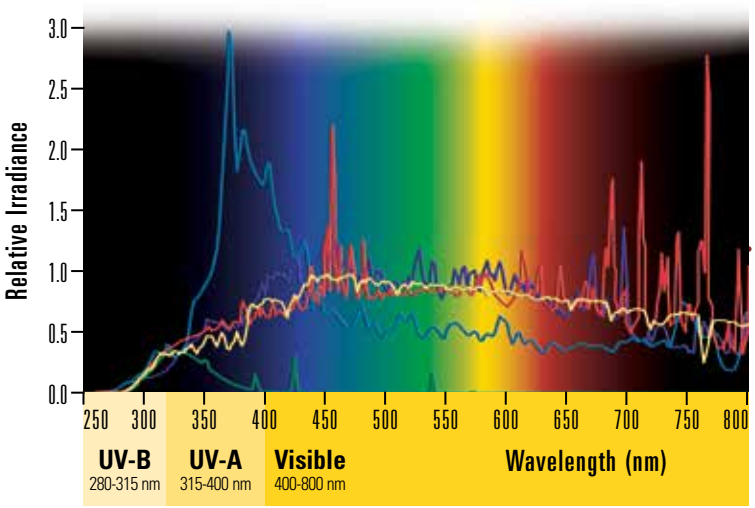
Which Light is Right?

Choosing the "right light" is one of the first steps in creating an accurate and reliable weathering test program. The Ci5000E 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 Ci5000E 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 Ci5000E is perfectly suited for testing:

- **Consumer electronics:** smart phones, smart watches, smart glasses, tablets, headphones/ earbuds, laptops, desktops, touchscreen displays
- **Automotive:** interior displays, interior and exterior cameras and sensors, PV windshield glass
- **Building materials:** electrochromic glass
- **Renewable energy:** Mini PV modules









FEATURES

A Higher Order of Weathering Testing Performance Through Superior Science

The Ci5000E is designed for OEMs in the consumer electronics, automotive, building materials, and renewable energy industries. A new configuration of its Ci5000 xenon arc platform for accelerated testing of powered electronic devices and components – the Ci5000E has been certified CE, UL, CSA, ISO, EN and UKCA compliant.

Slip Ring

Provides power directly to test specimens, creating conditions that more closely replicate real-world use. No other weathering device offers this capability.

Oscillating Sample Rack

The sample rack oscillates 360° to maximize exposure uniformity over all specimens while preventing electrical cables from getting tangled around the rack. 11,000 cm^2 of exposure area makes this the largest electronics-focused xenon weathering instrument available.

Controlled Irradiance

Up to 2-sun irradiance levels or higher based on your test requirements. Narrow band (340 nm or 420 nm) and broad band (300-400 nm) with an optional channel that switches between monitoring and control.

Porthole

Used to pass cables through if operators are using additional equipment to test/monitor specimens, or if additional power is needed.

Test Chamber Temperature

Closely simulates your material's end use environment.



Intuitive User Touch Screen Interface

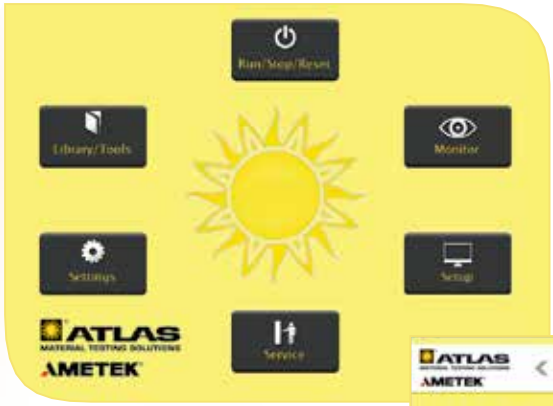
Increases functionality that makes the Ci5000E easy to program, monitor and calibrate.

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

Supports any user-defined test program or cycle, except those requiring water spray. The Ci5000E does not include a water spray feature.

Advanced Digital Control

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





Stacked Test Status Indicator Light

A highly visible visual reference of the instrument's condition status. No need to be in direct eyesight of the machine itself to know the instrument status.

SmartDamper

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

Emergency Stop Button

A more ergonomic way of shutting off power to the instrument in the event of an emergency.

VibraSonic Dual Nozzle Humidity Control

Accurately replicates humidity levels to meet stringent global test requirements; a second nozzle expands humidity range.

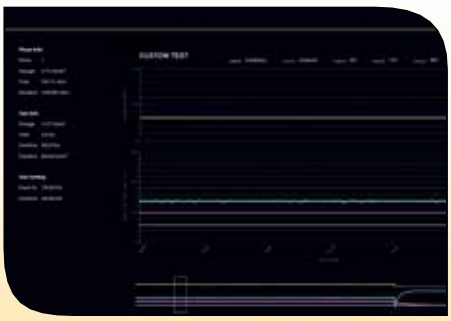
Black Panel Thermometer (BPT) or Black Standard Thermometer (BST)

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

Xenon Lamp Cooling System

The Ci5000E is equipped with a ground-breaking xenon lamp cooling system that dramatically reduces the amount of cooling water used. The cooling water temp can be selected and changed for higher irradiance tests.

Additional Features



Data Acquisition

Live streaming and archived test and instrument data from your Ci5000E can be accessed, viewed, and analyzed using Atlas' proprietary data acquisition program, WXView II.

SmartLight Monitor

Verifies that the correct light capsule is installed.

Water Purity Notification

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



CONTROL

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

Simplified User Interface

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

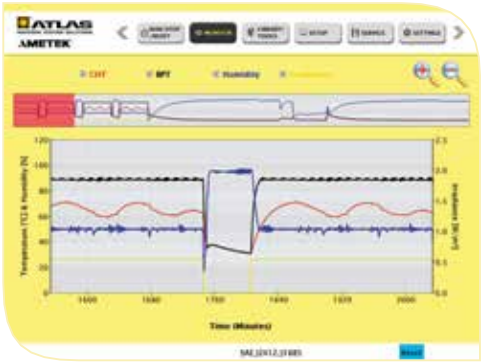


Two Simple-to-Read Pages and On-screen Trend Plot Monitor All Critical Status Information

- Rack Temperature: Black Panel Temperature (BPT), Black Standard Temperature (BST) or Both
- Chamber Temperature
- Relative Humidity
- Irradiance

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

- Incoming Deionized Water Quality
- Lamp Cooling Water Temperature
- Countdown in Time or Radiant Exposure
- Phase Type and Duration
- Optional Temperature Panel
- Second Irradiance Channel





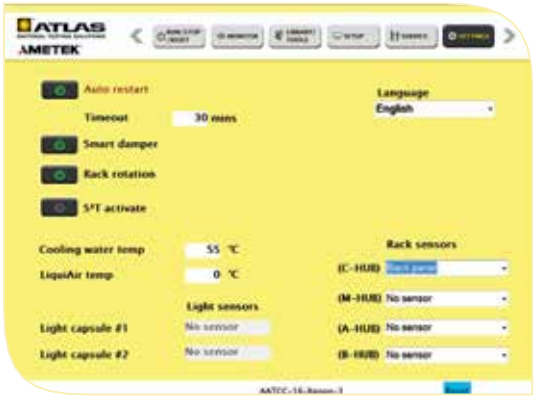
18 Preprogrammed tests for plug-and-play use

The test list includes:

ISO	GM	JASO
ASTM	Ford	IEC
SAE	MIL	

Space for Several Custom Test Programs

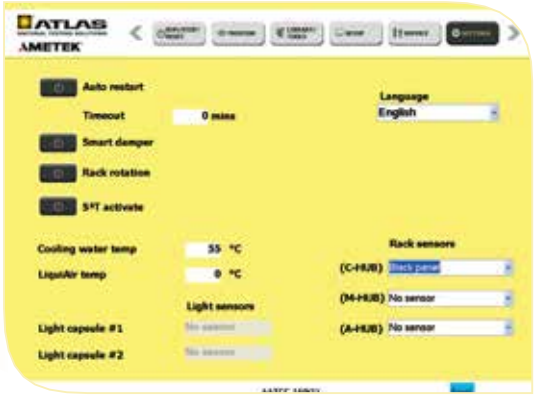
Existing test methods can be copied and edited for custom applications.



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
- Auto Restart After Power Interruption



Multi-lingual Capability

Select the desired language:

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



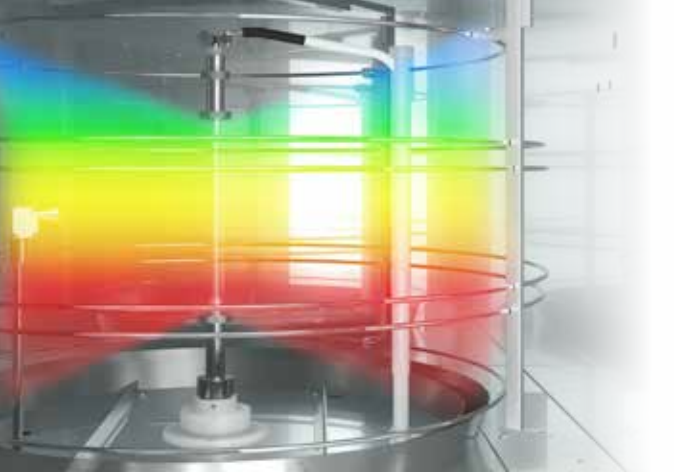
New User Functionality

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-defined test conditions have been met



LIGHT

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

Rotating Sample Rack

The inclined rotating rack delivers the best exposure uniformity.

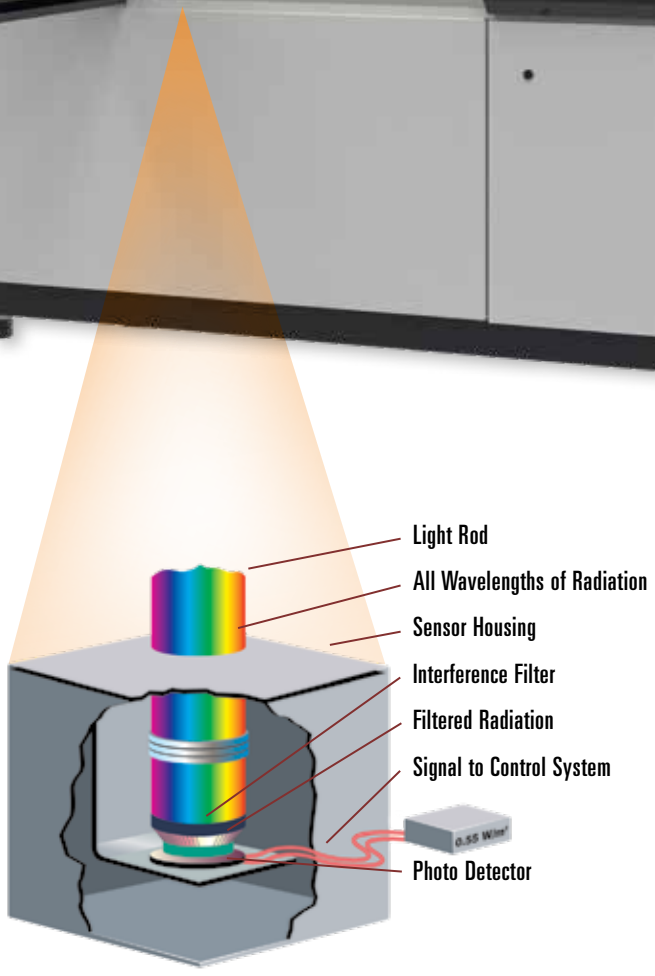
- Samples continuously oscillate 360° during test. No need to manually rotate samples
- Uniform specimen and chamber temperature, RH and irradiance
- Allows for even and consistent airflow over sample surfaces
- Automatic Selection for Irradiance Values
- Can accommodate three-dimensional samples



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)
- 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



FILTERS & STANDARDS

Filter Combinations		Test Conditions	Irradiance Ranges [W/m²]			
Inner	Outer		Wattage	300-400 nm	340 nm	420 nm
Right Light™	Quartz	Weathering tests requiring the most precise match to sunlight available	Min 5000 W Max 14000 W	42 169	0.40 1.68	0.81 3.13
Right Light™	CIRA Coated Quartz	Weathering tests requiring the most precise match to sunlight available and lower test specimen temperatures	Min 5000 W Max 14000 W	42 170	0.40 1.66	0.81 3.20
Type S Boro	Type S Boro	Most common combination for weathering tests (Daylight filter system)	Min 5000 W Max 14000 W	33 139	0.28 1.24	0.71 2.87
Type S Boro	Soda Lime	Most common combination for lightfastness tests behind window glass	Min 5000 W Max 14000 W	31 128	0.26 1.09	0.73 2.87
Type S Boro	Soda Lime + Float Glass in Auxiliary Lantern	Common combination for testing European automotive interior trim materials (Requires lantern assembly)	Min 5000 W Max 14000 W	26 108	0.20 0.81	0.67 2.63
Quartz	Type S Boro	Weathering tests with somewhat more and shorter UV than sunlight	Min 5000 W Max 14000 W	39 158	0.35 1.48	0.74 2.90
Quartz	CIRA on Type S Boro	Weathering tests requiring full spectrum match and/or lower test temperatures	Min 5000 W Max 14000 W	40 166	0.37 1.55	0.78 3.04
Quartz	CIRA on Soda Lime + Float Glass in Auxiliary Lantern	Lightfastness test for automotive interior materials to meet GMW 3414TM	–	91	0.75	2.20
Quartz	Type S Boro + 335 nm Long Pass Filter In Auxiliary Lantern	Lightfastness test for automotive interior materials to meet Ford FLTM B0 116-01	–	45	0.37	1.06

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 Ci5000E Weather-Ometer® meets or exceeds the following industry standards:

ASTM	D7869*	G155*			
Ford	FTLM BO-116-01				
GM	3414TM	14162			
IEC	60068-2-5*	62788-7-2			
ISO	105-B02	105-B04*	105-B06	4892-2*	16474-2*
JASO	M346				
MIL	STD 810-H				
VW	PV 1303	PV 3929*	PV 3930*		
SAE	J2412	J2527*			

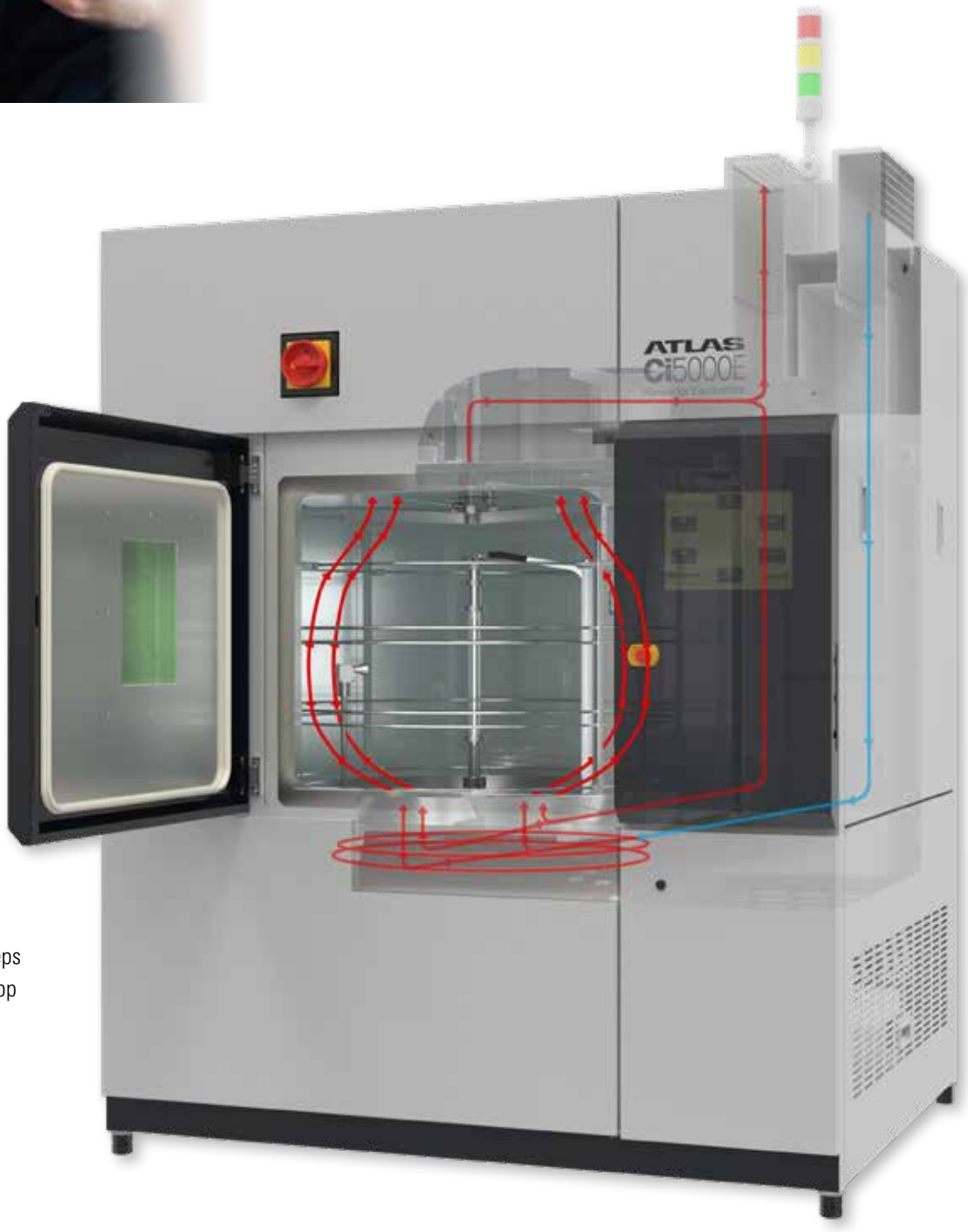
* When modified to be performed without water spray.

This is a sample of global standards that can be met by the Ci5000E. 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 Ci5000E 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 95% RH in light cycles*
- Up to 100% in dark cycles*

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

Vortex Air Baffle

Newly designed vortex air baffle keeps sample temperatures uniform from top to bottom rack tier.

TEMPERATURE CONTROL

Consistent, Controlled Temperature Delivers Repeatable and Reproducible Results



SmartDamper

- 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

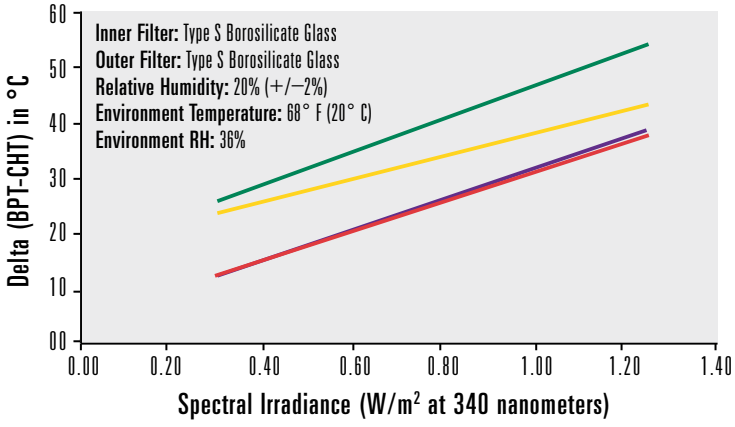
- Advanced PID algorithms allow for discrete manipulation of test parameters
- SmartDamper, variable speed blower and chamber heater are independently controlled
- Instrument performance envelope is optimized allowing maximum flexibility in custom test applications

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



Data above does not take into account the heat load generated by powered samples.



OPTIONS

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

Hybrid Cooling System

Improved xenon lamp cooling system dramatically reduces water consumption.

- LiquiAir DI water recirculation system available in top- and wall-mounted configurations
- Reduces water consumption up to 100%*

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

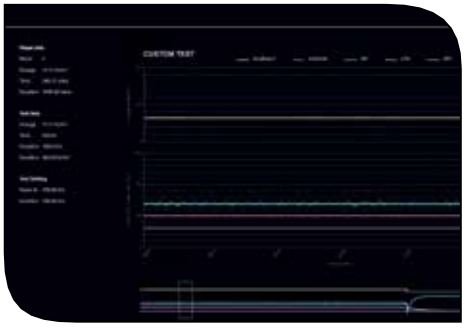




WXView II

The WXView II data acquisition program provides users with access to live and archived test and instrument data from anywhere in the world, anytime they need it.

- View all standard test parameters such as irradiance, BPT/BST, CHT, and % rH via secure web browser
- Monitor instrument controls such as lamp power, fan speed, heater output, and damper position
- Recall and export archived test and instrument data for further analysis
- Reminders on when to perform preventative maintenance tasks and calibrations, and replace consumables
- Multi-site monitoring





Additional Options

Auxiliary Filter Lantern

For meeting special test requirements.



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 WB 300-800 nm
  - XenoCal NB 340 nm
  - XenoCal NB 420 nm



Sample Holders

The chart below is a representative sample of specimen holders available for the Ci5000E Weather-Ometer®.
For specific information about specimen holders that best meet your needs, please contact your local Atlas representative.



Holder Type (Part Number)	Description	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	111
SL-3T (19163900)	Single exposure window w/spring clip back	Glass, touch panel materials, display laminates, cover-layer materials, optical/UV/protection films, automotive interior, adhesives, textiles	67 x 145 x 3	50 x 121	111
SL-3T with Glass (07303900)	Single exposure window w/glass and w/spring clip back	Touch panel materials, automotive interior, adhesives, textiles	67 x 145 x 15	50 x 121	111
CD-3T (20215700)	Three exposure windows w/spring clip back	Glass, automotive interior, plastic film, textiles	67 x 145 x 3	3 windows: 38 x 50	111
CD-3T with Glass (07303800)	Three exposure windows w/glass, spring clip back	Automotive interior, plastic film, textiles	67 x 145 x 15	3 windows: 38 x 50	111
TEX-3T with Mask (19186700)	Single exposure window w/mask, adjustable	Textiles, foam, foam-backed materials	45 x 134 x 12	19 x 119	170
Polystyrene Reference Chip (19183400)	Polystyrene reference chip holder	Standard weathering reference material	50 x 88 x 2	43 x 82	93
4 x 6 Panel (19210200)	4 x 6 (in) panel holder	Coatings, rigid plastic	104 x 155 x 12	101 x 146	71
3 x 6 Panel (19188501)	3 x 6 (in) panel holder	Coatings, rigid plastic	76 x 152 x 9	76 x 146	87

FEATURES & SPECIFICATIONS

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
- 18 Factory Pre-Programmed Test Methods
- Space for Several Custom Programs
- Multi-Language Capability (English, French, German, Spanish, Japanese, Chinese, Korean, Turkish)

SmartDamper

SmartLight Monitor

Streaming Data Output USB or Ethernet

Air Heater

Xenon Lamp Cooling System

Air Intake Dust Filter

Three-tier Specimen Rack

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, EN and UKCA Compliance

Sample Management

E-mail Functionality

Slip Ring

Chamber Porthole

360° Rack Oscillation

Emergency Stop Button

Stacked Test Status Indicator Light



Optional Features

Auxiliary Lantern

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	198 cm (78 in)
Height with Stack Light	230 cm (90.5 in)
Width	160 cm (63 in)
Depth	127 cm (50 in)
Floor Space	212 cm (83 in) x 293 cm (115 in) Including Access Area
Total Exposure Area	11000 cm^2 (4330.7 in^2)

Electrical Specifications

Wiring Connections: 3 Phase, 3 Wire w/Ground (3/PE)	
Operating Voltage Range	440-480 VAC Phase to Phase
Maximum Current	60 Amps
Frequency	50/60 Hz
Maximum Power	24 kW
Wiring Connections: 3 Phase, 4 Wire w/Ground (3/N/PE)	
Operating Voltage Range	340-415 VAC Phase to Phase
Maximum Current	63 Amps
Frequency	50/60 Hz
Maximum Power	24 kW
Slip Ring	
Number of wires	4 (L1/L2/L3/PE)
Nominal line voltage	150Vdc

Water Consumption

	Deionized Water	Tap Water at 18.5° C
Pressure	138-344 kPa (20-30 psi)	138-344 kPa (20-30 psi)
Flow Rate (max*)		
Humidification	0.2 L (0.052 gal) min	N/A
Xenon Lamp Cooling at 6000 W	N/A	1.5 L (0.396 gal)/min

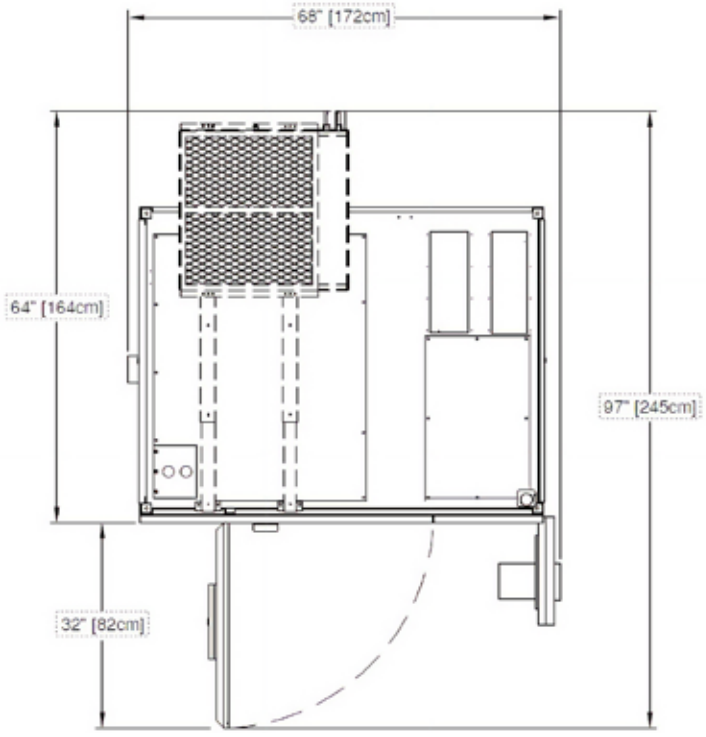
* Typical water usage will be less. Tap water requirements for lamp cooling with the LiquiAir system will be near zero.

Weight

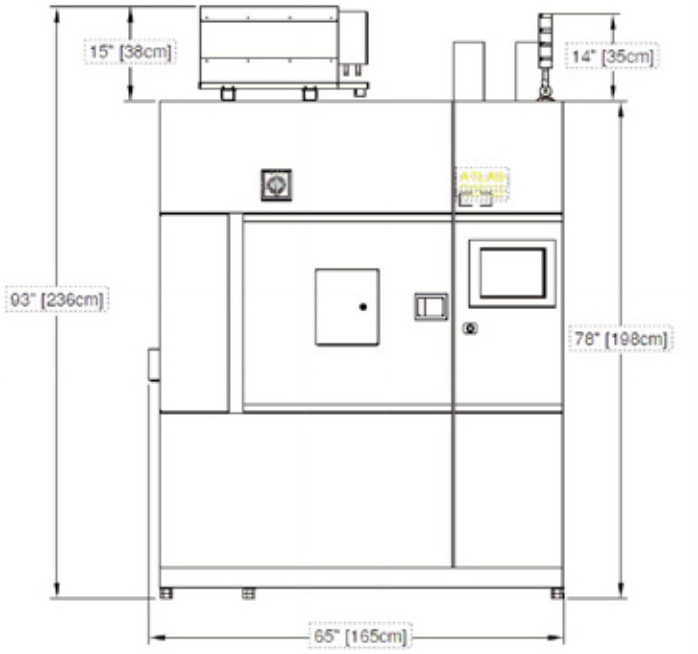
Weight of Fully Skidded and Wrapped Ci5000E	943 kg (2080 lbs)
Weight of Ci5000E without Skid	807 kg (1780 lbs)

Space Requirements

(Top view with LiquiAir™ option)



(Front view with LiquiAir™ option)



ATLAS MATERIAL TESTING SOLUTIONS / AMETEK®

Atlas offers more than testing instruments. From technical advice to final test method implementation, Atlas provides the support that you need when determining the right weathering testing solution for your products. For more information, please contact your local Atlas sales office or visit us at **www.atlas-mts.com**.



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Élancourt, France ■ Bangalore, India

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