

Hyperion™ solar-adaptive shading powered by Quantum®



Improve comfort and productivity
while saving energy



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The challenge:

Most buildings consume unnecessary amounts of electricity — lights are on at full intensity when ample daylight is available to light the space. This wastes energy, creates discomfort, and reduces productivity.

The solution:

Optimize the use of daylight and electric light to save energy and create a productive, comfortable environment.

Hyperion™ solar-adaptive shading enhances the energy saving potential of daylight harvesting lighting systems, which use daylight sensors and dimmable fixtures to set and automatically maintain the perfect light level.

What is Hyperion?

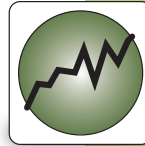
Hyperion is an automated shading system that adjusts Sivoia® QS shades throughout the day based on the sun's position. It maximizes functional daylight in a space while minimizing glare and solar heat gain to create a comfortable work environment.

Hyperion can function as a stand-alone system or as a key feature of the Quantum® Total Light Management system.

How does Hyperion work with Quantum?

Quantum is a lighting control system that has the ability to manage total light levels in response to available daylight. By combining Hyperion's effective daylight management with Quantum's daylight harvesting capabilities, electric light usage can be lowered to conserve electricity every day.

What are the benefits?



Increase comfort and productivity

Preferred light levels and automated shade control are conducive to a productive work environment



Create a more flexible space

Shade groups easily re-configure to allow for flexible use of a space without rewiring. Each group can be tuned to meet specific daylight needs



Save electricity and protect the environment

Reduce greenhouse emissions by eliminating unnecessary energy use



Save money

Lower operating costs with Hyperion's minimal maintenance requirements and through electricity savings with daylight harvesting, and reduced HVAC costs

Example:

A 50,000 sq. ft. commercial building spends about \$45,000 each year on lighting energy.¹

Much of that money is wasted due to ineffective light control. Through the optimization of electric light and daylight, Quantum and Hyperion can cut lighting costs by 60% or more while greatly improving the visual environment.

Light management strategies

Daylight management with Hyperion™

Daylight is an excellent source of task lighting, but incorporating it can present several challenges.

Uncontrolled daylight will result in glare and solar heat gain. Windows designed to bring daylight and views into the workplace can become a source of visual and thermal discomfort.

Hyperion is needed to control the intensity and quality of daylight entering a space. Lutron® shades are the perfect solution for managing daylight while preserving views.

Total light management with Quantum®

Quantum maximizes the efficient use of light in a building to prevent unnecessary energy costs.

Quantum automatically dims or switches all electric lighting, and controls daylight through Hyperion's automated shades. Quantum manages, monitors, and reports on lighting usage for optimal energy performance with minimal maintenance and operation costs.



Energy conservation

Effective shade control contributes to the sustainability of a building by reducing energy consumption. Typically, HVAC savings will be about 10%.

Lower cooling costs² (9%)

- Shades block and reflect direct sunlight during the day to reduce demand on the building's air conditioning system
- During summer afternoons, shades can provide cooling benefits that help lower energy consumption when peak charges may apply

Lower heating costs² (1%)

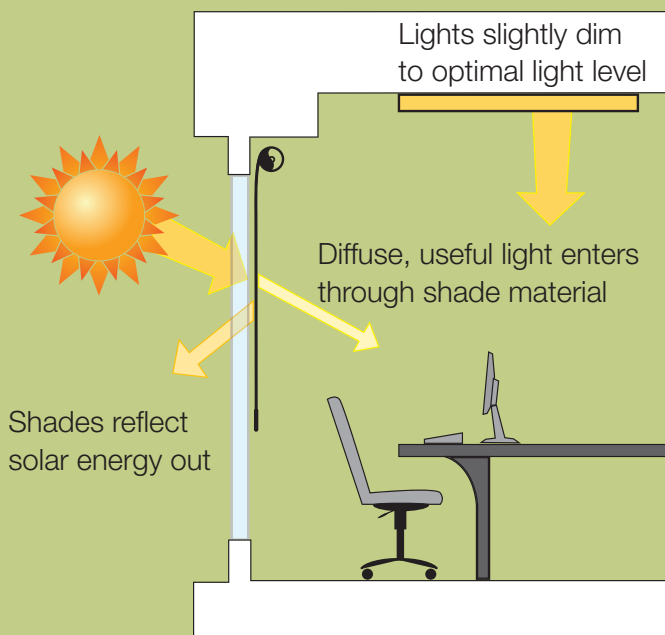
- Hyperion™ can be programmed to lower shades completely at night to provide an additional layer of insulation to keep warmth inside the building

Enable effective daylight harvesting

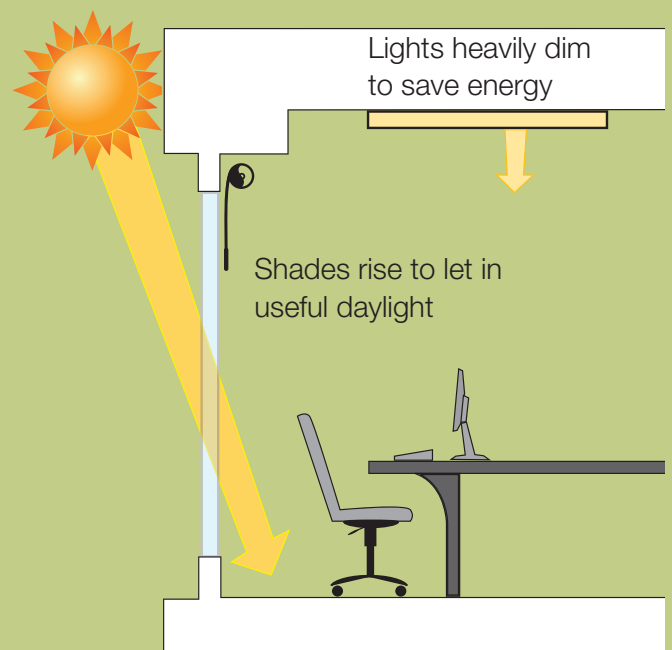
Manual shades often become static. When direct sunlight reaches their workspace, people typically lower the shades to limit heat and glare. Unfortunately, once shades have been lowered, they are rarely raised to take advantage of indirect sunlight when it is available³. Instead, overhead lighting is used – wasting electricity.

Hyperion's automated shades effectively manage daylight. This allows daylight harvesting systems to dim the overhead lights – helping to conserve energy on a daily basis. Dimming the lights also lowers the amount of AC needed to cool the heat generated by the lighting system.

Low sun - shades down to manage light intensity. View is still available due to sheer fabric.



High sun - shades up for daylight harvesting.



The human element

People react to daylight in a number of ways. Consequently, daylight can have a profound impact on their comfort and productivity.

Physical

Our biological clock is regulated by daylight. The eye responds to a blue wavelength found in daylight that office lighting cannot reproduce. Without sufficient access to this wavelength, the body has difficulty maintaining its natural cycle — impacting alertness and health⁴.

Hyperion™ generates a shade schedule that permits an effective amount of daylight to enter the workplace.

Psychological

Preservation of outdoor views has a positive effect on occupants. Workers with views perform better on tests than those without any scenery⁵. Also, many people believe that working in daylight is better for health and well-being than electric light. Therefore, the visual environment can significantly influence a worker's mood and perception of the quality of his or her job⁶.

Hyperion's automatic shade adjustments provide sufficient exterior views to maintain a connection with the outdoors.

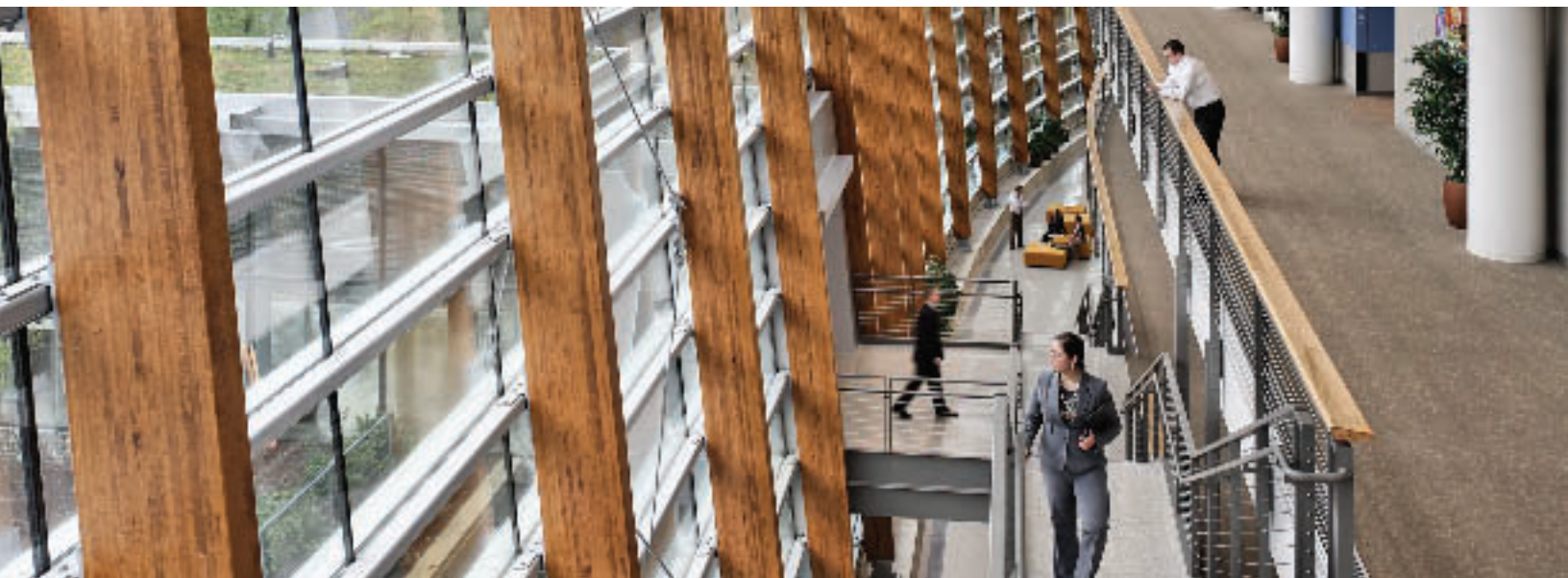
Visual

Uncontrolled daylight can produce solar heat gain and excessive glare, causing eyestrain, visual discomfort and subsequent headaches. Such conditions may drive employees to break from their tasks and have been shown to increase error rates⁷.

Hyperion controls glare and properly diffuses daylight to create a comfortable and productive working environment.

Automated shading systems must move the shades throughout the day, and the eye is inherently drawn to movement.

To reduce potential distractions, Hyperion allows the amount of time between shade movements to be specified for each area.



Hyperion™ solar-adaptive shading

Why do we need Hyperion?

As the Earth orbits around the sun, the angle and intensity of available daylight changes along with the seasons. Thus, effective daylight management requires that shades on each building façade receive a unique schedule of positions for every day of the year.

About Hyperion

Hyperion uses advanced solar tracking technology. This means that Hyperion does not need sensors to locate the sun; instead, it uses a set of astronomical equations to calculate the sun's position each moment of every day.

By calculating the sun's exact position, a schedule can be developed to accurately manage shade positions on each façade. This maximizes effective daylight while reducing the amount of heat and glare entering the space.

Cloudy day scenario

Hyperion's standard set-up achieves a substantial portion of the energy savings available through daylight harvesting without adjusting to weather conditions.

To accommodate for variations in weather conditions, Hyperion can also be programmed to transition into a cloudy day mode where the shades adjust to preset levels based upon personal preferences.

Cloudy day mode can be entered manually through keypads or Q-Admin™ software, triggered by sensor inputs through contact closures or Ethernet/RS232, or through BACnet integration with a building management system.

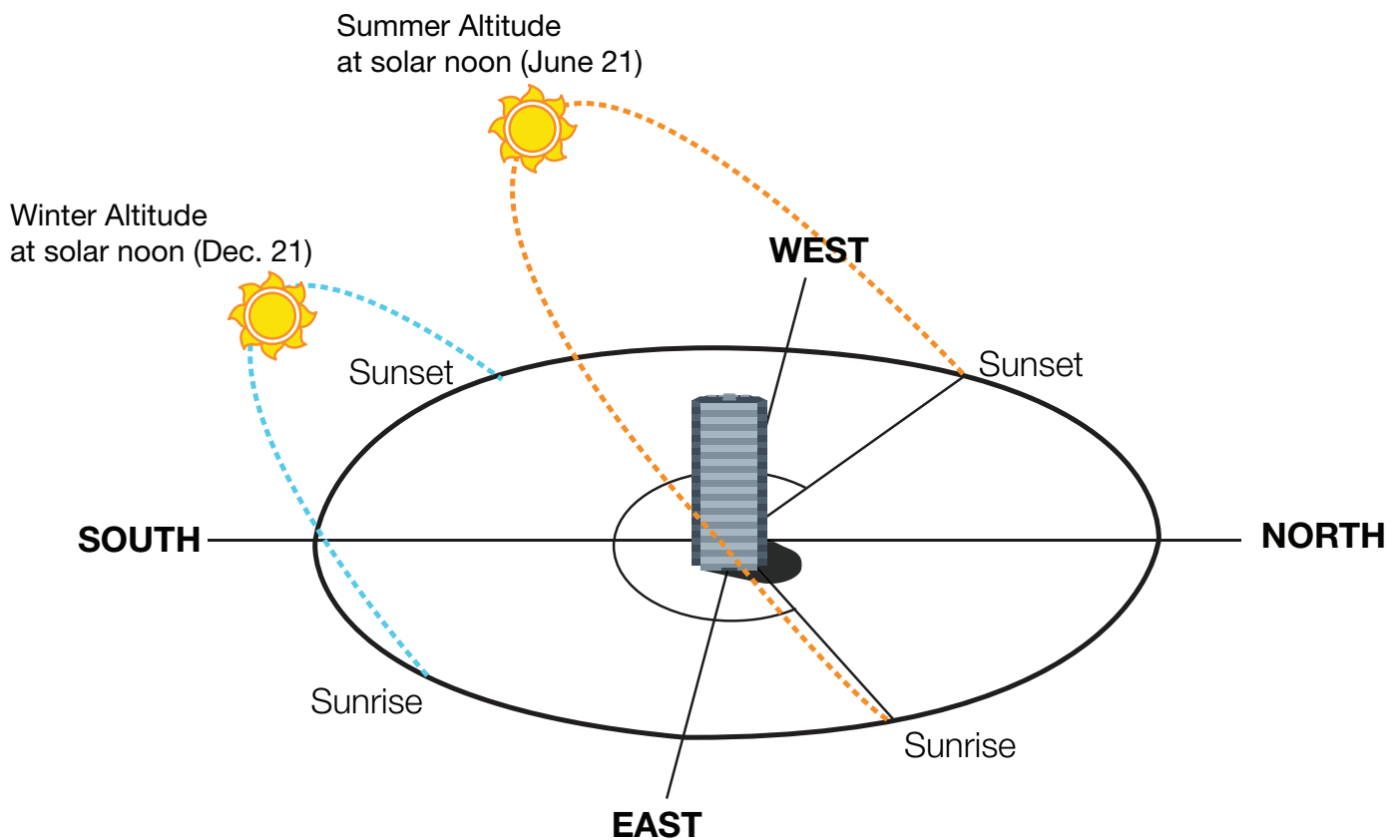


Seasonal solar variation

Seasonal solar variation

The position of the earth relative to the sun changes throughout the year. Consequently, the sun will be in a different position at noon on June 21st than it is at noon on December 21st.

Hyperion™ effectively manages daylight entering the space by incrementally changing the shade adjustment schedule of each façade on a daily basis, maximizing comfort and productivity.



Solar variance typical of median latitudes (Example: New York City, U.S.A.)

Locations at higher latitudes such as Montreal, Canada exhibit an even greater difference between winter and summer solstices. Lower latitude locations such as Houston, Texas, have a smaller differential between winter and summer.

June 21st | 11:00 a.m.

Hyperion™ automatically positions shades to let useful daylight into the space. Lights near windows dim to save energy.



December 21st | 11:00 a.m.

Shades remain partially closed to block harsh low-angled winter sun. Lights near windows remain bright to maintain preferred light levels.



The Hyperion™ advantage

Simple

Simple set-up and integration

- A standard Hyperion system does not require sensor calibration, making set-up quick and uncomplicated
- Set-up is based on easily gathered information about a building's geographical position and façade orientations
- System requires minimal long-term maintenance
- Integration with building automation systems is easily achieved through BACNet® IP protocol

Reliable

Distributed intelligence and shade control

- No desktop computer is required to run the system on a daily basis
- Once programmed, each Quantum subsystem can independently run all of its shade groups
- For large structures, this ensures that each group of shades will be operating, regardless of maintenance on other areas of the building



Customizable

Tailored set-up

- Hyperion™ automatically develops shade schedules by combining information about the building's location, orientation and window dimensions with user-specified limits on sunlight penetration and amount of time between shade movements
- Precise alignment across windows of varying heights is available
- This system has the flexibility to function with or without sensors
- Hyperion offers a "visor position" setting, which provides additional control of ambient light levels by restricting a shade from going above a set point

Easy tuning

- The system can be tuned via Q-Admin™ without re-wiring or sensor calibration (see page 10)

Personal adjustment

- Hyperion control can be overridden at any time to suit personal preferences
- Personal control is a key component of Hyperion because individuals with different preferences can easily be accommodated



Quantum® software highlights

The heart of the Quantum solution is Q-Admin™—a powerful software tool that allows facility managers to manage daylight for maximum energy efficiency, comfort, and productivity. A facility manager can control, configure and monitor any shade in the entire building from a central location.

The system can be tuned from Q-Admin to meet the changing needs of any space.

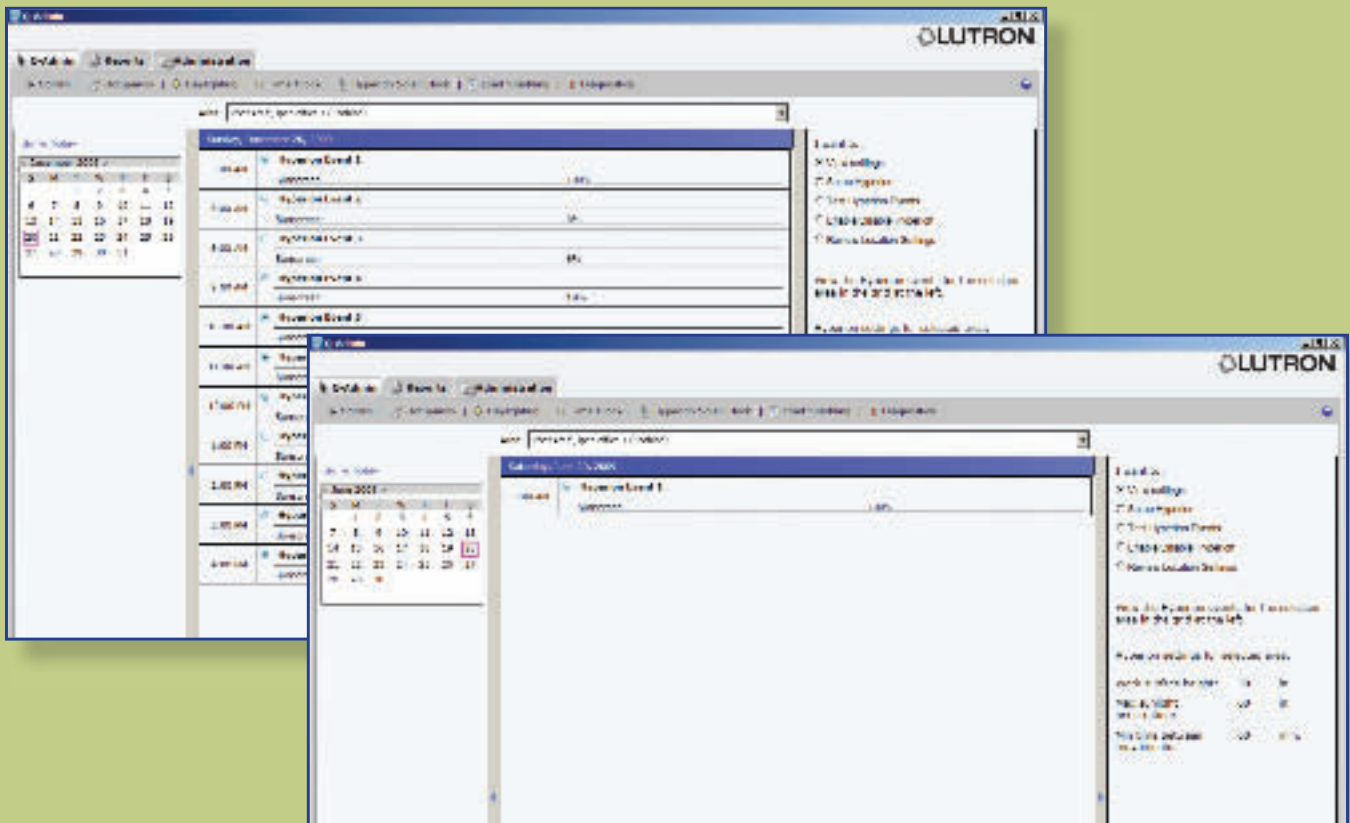
Q-Admin Control and Monitor View

System manager can control and monitor the shades by each area in a tabular or floorplan view.

For Hyperion™, the daily shade schedules of each area can be viewed to provide information on what is happening in each area throughout the day.

If Hyperion needs to be disabled, it can easily be done by area or for the whole building.

Daily shade schedules



Hyperion automatically generates shade schedules by group. The schedule for each group can be viewed for any day of the year.

Modifying Hyperion™

The configurations for each shade area in Hyperion can be easily tuned by building management. As the office floorplan changes, Hyperion can be quickly modified and will automatically re-calculate the shade schedules for each area.

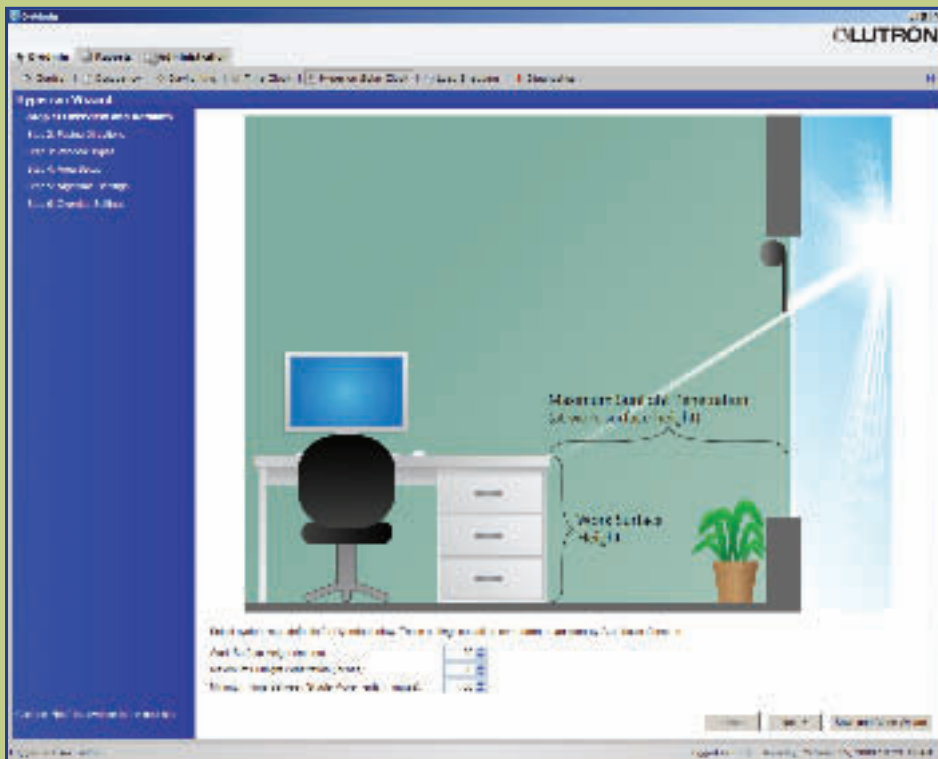
Reporting

Facility managers can improve the maintenance and operation of shading systems. Diagnostic reports can be generated to show the status of each individual keypad and shade motor in the system.

Q-Design

Through the Q-Design software, shades can be reassigned into new groups without rewiring any part of the system. These changes can be made in collaboration with the Lutron® technical team.

Modifying Hyperion



As the office floorplan changes, Hyperion is quickly and easily modified.

Hyperion™ system components

Quantum® components



Sivoia® QS daylight controls

Key components

Hyperion solar-adaptive shading is powered by the Quantum Total Light Management system.

Through Hyperion, Quantum uses Sivoia® QS shades to create a dynamic shading system for the entire building.

The Hyperion shading system is set up, tuned and controlled using Q-Admin™ software.

Quantum's BACnet® capabilities also allow a building automation system to control and monitor the shades.



Q-Admin software

- Used on PC to control and monitor Quantum



Quantum hub

- Connects all Quantum system components and powers Hyperion



Electronic Drive Unit (EDU)

Sivoia QS roller shades

- Reduce glare and solar heat gain for increased productivity, comfort, and energy savings while preserving views
- Electronic Drive Unit (EDU) quietly controls shades with ultra-precise alignment



QS Smart Panel Power Supply

- Provides low voltage power to shades and accessories



Lutron® fabrics



seeTouch® QS
wall keypads

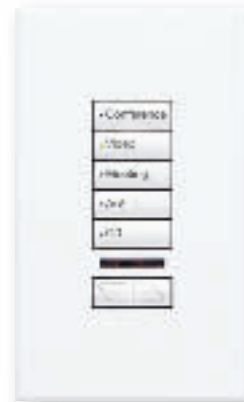


For reliable daylight control that enhances a room's décor, Lutron provides a superior selection of roller shade fabrics.

Categories:

- **Sheer:** daylight is filtered while preserving view
- **Dim-out:** permits some light, but view is limited to shapes and shadows
- **Blackout:** prevents all light from passing through the material. Combine with side channels, top treatments, and other components for a complete light seal, when necessary.

Fabrics are available for any application and every price range.



Wall keypads

- Select a preferred light level for every task, and adjust shades quietly at the touch of a button

Customization through shade fabric

Providing the perfect shading solution

The best control system in the world is only as effective as the fabric it places between the sun and your space.

Shading solutions are available in a wide range of fabric options specifically designed to manage and transform light in various ways. Choosing the correct fabric for your facility will help create a productive, energy-efficient environment.

Shade fabric parameters

Color:

Although it is typically associated with aesthetics, fabric color can also have a significant impact on a shade's performance.

- Dark-colored shade material minimizes glare and preserves views
- Light-colored shade material reflects the sun's heat
- The best of both worlds is a dual-sided fabric that places a dark color towards the interior to maintain views, and a light-colored backing towards the window to reduce solar heat gain

Openness factor:

Openness factor is a percentage indicating how much of a fabric's weave is open to permit light and views to pass into a space. Commercial shading applications typically use a 3% or 5% openness factor fabric, but 1% may be required for particularly intense lighting scenarios.

Glass, like shades, can alter the daylight as it enters a space. Understanding how much visible light and solar energy passes through the glass allows you to choose an appropriate shade fabric.



Shade fabric categories

Fabrics can be grouped into three categories based on their permeability to light.

Sheer fabrics – Openness factors: 1%, 3%, 5%, 10%
Feature an open weave that allows light and views through the shade material.

Dim-out fabrics – Openness factor: <2%
Fabrics that allow less light to penetrate. They provide greater privacy than sheers by limiting views to shapes and shadows or a soft glow throughout the entire shade.

Blackout fabrics – Openness factor: 0%
These fabrics are impervious to light. Typically used in rooms where A/V presentations are given. If required, shades can travel in optional side-channels to create a complete light seal.

Specialty shade fabrics

Dual-sided fabrics:

Silver-backed fabrics are available for applications requiring the maximum protection from solar heat gain by reflecting sunlight. Other dual-sided fabrics are available for reducing typical solar heat gain.

Green fabrics:

By coupling sustainable fabrics with the latest in shading control technology, Lutron® is committed to providing comfortable and sustainable indoor environments.

Some shade fabrics may contain chemicals for durability that impact indoor air quality and our environment. Sustainable fabrics are a growing category that addresses these concerns through third-party certifications. All of our fabrics certified with GREENGUARD® are also certified for Children and Schools – the most stringent certification on the market.



The Lutron® difference

A history of sustainability, innovation, and quality

At Lutron, sustainability is not a new concept. We have been designing industry-leading technology that saves energy and reduces green house gas emissions since 1961. Lutron is a company built on a belief in taking care of people: customers, employees, and the community, and is a proud member of the U.S. Green Building Council.

We innovate in advance of emerging market needs and continually improve our quality, our delivery, and our value.

Lutron owns over 250 patents and manufactures more than 15,000 products. For over 45 years, we have met and exceeded the highest standards of quality and service. Every one of our products is quality-tested before it leaves the factory.

Global service and support

You can count on a level of support unequaled anywhere in the industry and anywhere in the world. Lutron provides 24/7 technical phone support. Lutron Field Service, comprised of a global network of customer-focused field service engineers, provides world-class services that begin before your building is commissioned and continue throughout the life of your building.



Save energy on your next project!

Call Lutron today at 1.866.299.2073 to be connected to a representative who will work with you to develop a plan for your application.



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