

SOLUTIONS FOR BIOCLIMATIC FAÇADES



## Commercial Building Solutions

improve building comfort and economic efficiency

**somfy**

100 million motors

somfy®  
100  
MILLION  
motors

Somfy Systems, Inc., is a global leader in the manufacturing of strong, intelligent and quiet motors for both interior and exterior window coverings. For more than four decades, engineers at Somfy have been designing products for both the commercial and residential markets to motorize window coverings such as interior shades, wood blinds, draperies, awnings, rolling shutters, exterior solar screens, projection screens and more. Somfy motorization systems are easily integrated with security, HVAC, and lighting systems, providing total home or building automation. Somfy recently celebrated the production and sales, throughout the world, of 100 million motors since 1969. This accomplishment further reinforces that Somfy is the worldwide leader in the manufacturing of interior and exterior window covering motors.



# Introduction

Somfy Systems is the global leader in the manufacturing of strong, intelligent, quiet motors and control systems for both interior and exterior window coverings. Since 1969, Somfy engineers have designed products for both the commercial and residential markets and recently celebrated the production and sales, throughout the world, of 100 million motors.

Somfy's Commercial Building Solutions offer a wide range of intelligent motors and controls that optimize the utilization of natural light in your commercial workspace. Our systems are calibrated to maximize occupant comfort while enhancing the visual environment, minimizing solar glare and heat gain, and providing UV protection. Somfy's natural light control automation systems are scalable in design, offered in low voltage, line voltage or wirefree options, and are perfect for projects of any size or budget.

In the coming pages, you will see how Somfy strategies will help you throughout the year in all climates to achieve maximum comfort and energy efficiency. Somfy strategies adjust to the needs of the occupant based on seasonal elements, and our products are easily integrated depending on the systems utilized in a given building. You will see how our solutions are best integrated into the vertical markets, how we interact with artificial lighting systems to offer a system with superior energy efficiency, and innovative project examples.

## Table of Contents

The Challenges of Bioclimatic Façades.....	1
Natural Light Management, Dynamic Insulation, Natural Ventilation .....	3
Vertical Market Segments .....	5
Offices .....	7
Hospitality .....	9
Education .....	11
Healthcare.....	13
LEED Facts .....	15
Somfy Digital Network RS485™ – Line Voltage Motors .....	17
Somfy Digital Network RS485™ – Low Voltage Motors .....	19
Case Studies.....	21
United Nations .....	21
Blinds To Go .....	23
RBC Centre .....	25
Sequana.....	27

## AIA and USGBC Memberships





# THE CHALLENGES OF BIOCLIMATIC FAÇADES

Bioclimatic façades balance energy efficiency with the comfort of a building’s occupants by utilizing the best elements of the outside climate along with internal systems. Somfy accomplishes the creation of a bioclimatic façade with a fully automated intelligent integrated system that reacts to outside elements in real time; maximizing energy efficiency while eliminating undesirable climatic influences. With our integrated approach, Somfy meets the challenges of today’s commercial buildings:

## Meeting LEED and ASHRAE requirements

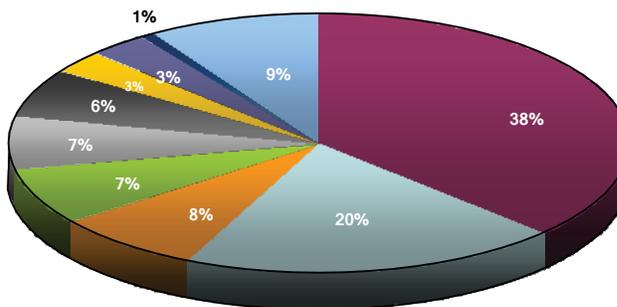
Utilizing Somfy solutions for bioclimatic façades can help attain 19 LEED points out of 110 on a new construction project, and up to 22 LEED points on a major renovation. Somfy contributes to key sustainability points such as light pollution, optimizing energy performance, and indoor environmental quality. Somfy also offers solutions that follow ASHRAE guidelines for enhancing the work environment by incorporating natural light to create favorable lighting and contrast, thermal comfort, and proper ventilation.

“Optimizing the building envelope for the climate can substantially reduce the size of the mechanical systems.” *(ASHRAE Energy Design Guide for Small to Medium Office Buildings)*

## Meeting current environmental requirements

### Total Site ENERGY Consumption in Commercial Buildings

- Space Heating - 2,203 trillion Btu (38%)
- Lighting - 1,143 trillion Btu (20%)
- Water Heating - 449 trillion Btu (8%)
- Cooling - 431 trillion Btu (7%)
- Ventilation - 384 trillion Btu (7%)
- Refrigeration - 354 trillion Btu (6%)
- Cooking - 167 trillion Btu (3%)
- Personal Computers - 148 trillion Btu (3%)
- Office Equipment - 64 trillion Btu (1%)
- Other - 478 trillion Btu (9%)



US Energy Information Administration (USEIA) 2003 Study

Energy efficiency plays a vital role in new construction design and refurbishment of all commercial buildings today. With 72% of energy use in commercial buildings attributed to lighting and HVAC systems (USEIA 2003), there is an obvious push to reduce the energy consumption of these systems. Somfy solutions promote the use of natural energy sources such as sunshine, daylight, and outside air. Automated solar shading and window opening devices integrated within the façade optimize the use of natural sources and contribute to increasing energy efficiency of buildings. When integrated with artificial lighting systems, maximum energy savings are realized by dimming artificial light while daylight is illuminating the space, or by turning off lights when a space is unoccupied.



## Improving the quality of indoor environments

On average, 80% of a company's operating costs are related to employees. Therefore, increasing productivity by only 1% would offset a company's energy costs for an entire year (REHVA Guidebook 2010). Thermal and visual comfort have a beneficial effect on the occupants' well being. Working or living in a more pleasant, healthy environment leads to improved efficiency and productivity. Automated shading devices contribute to meeting two objectives:

- Maintaining comfortable indoor temperatures for a longer period of time
- Enabling continuous glare control

## Adding value and longevity to the investment

With the long term reduction of energy related costs, the initial investment for integrated automated shading is returned after just a few years due to smaller HVAC installations resulting in lower energy bills. In renovation projects, the peak load can be substantially reduced. Automated shading also reduces the handling of shading devices by the building's occupants, extending the life of the shading devices and lowering maintenance costs.

## How SOMFY contributes to bioclimatic façades

For 40 years, Somfy has been developing intelligent solutions for building openings using high tech motorization and automation systems. Natural light management, dynamic insulation, and natural ventilation are three of Somfy's unique areas of expertise dedicated to the development of bioclimatic façades.

“Exterior shading combined with a good glazing selection is the best window strategy. Interior shading options can also help control solar heat gain.”

*(Lawrence Berkley Labs Tips for Daylighting with Windows)*

# NATURAL LIGHT MANAGEMENT, DYNAMIC INSULATION, NATURAL

Effective natural light management improves the visual comfort, well-being, and productivity of a building's occupants while reducing the need for artificial lights. This provides visual comfort indoors while enabling occupants to see the outside.

## Natural Light Management

### VISUAL COMFORT

Indoor visibility is a key factor for the occupants' sense of comfort. In order to maintain an optimal visual environment, automated solar shading systems take many parameters into account in order to provide occupants with maximum natural light and view to the outside, optimal levels of luminosity according to the building's activities, a good contrast level, and elimination of glare.

### RESULTS

#### A more comfortable workspace

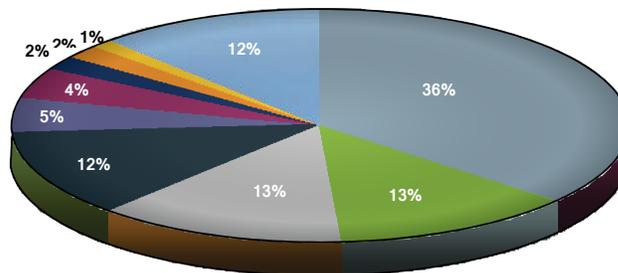
With automated sun protection devices, building occupants benefit from more natural light without the associated disadvantages. The ideal levels of contrast and brightness are maintained at all times and excessive glare is eliminated.

#### Energy savings on artificial light

Lighting accounts for a significant portion of a building's total electricity consumption and energy costs (36% on average based on USEIA study). With automated sun protection devices, this cost can be reduced significantly, yet users are able to retain their individual preferences.

### Total Site ELECTRICAL Consumption in Commercial Buildings

- Lighting - 1,143 trillion Btu (36%)
- Cooling - 397 trillion Btu (13%)
- Ventilation - 384 trillion Btu (13%)
- Refrigeration - 354 trillion Btu (12%)
- Personal Computers - 148 trillion Btu (5%)
- Space Heating - 115 trillion Btu (4%)
- Office Equipment - 64 million Btu (2%)
- Water Heating - 52 trillion Btu (2%)
- Cooking - 22 trillion Btu (1%)
- Other - 357 trillion Btu (12%)



US Energy Information Administration 2003 Study of Energy Savings (USEIA) on Artificial Light

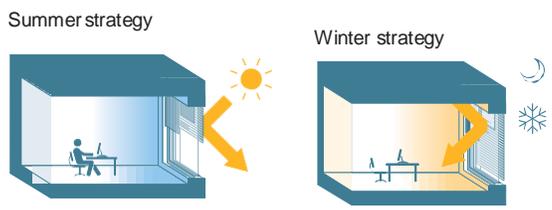
# VENTILATION

## Dynamic Insulation™

Windows are the main interface between the interior and exterior of a building. A façade with automated sun protection devices installed can provide precise control over these exchanges, influencing the way in which heat enters and leaves the building, keeping the inside cool in warm climates or optimizing solar gain in cool climates. During winter, solar devices can be programmed to close in the evening in order to avoid heat loss, whereas in the summer, they can automatically lower based on the orientation of the sun versus a façade to limit the green house effect.

### THE PRINCIPLE

Automated sun protection devices are raised or lowered according to changes in outdoor weather conditions and indoor comfort needs. They react to commands from weather sensors (temperature and sunlight) or control algorithms, according to the occupancy and vacancy periods in the building.



### RESULTS

#### Thermal comfort and an improved indoor environment

With Dynamic Insulation™, the building's occupants are no longer subjected to sudden variations in temperature. Constant thermal comfort helps to improve day-to-day well being.

#### Improved energy performance

All cooling, heating, lighting, and shading management systems are fully integrated and communicate with each other to maximize energy efficiency.

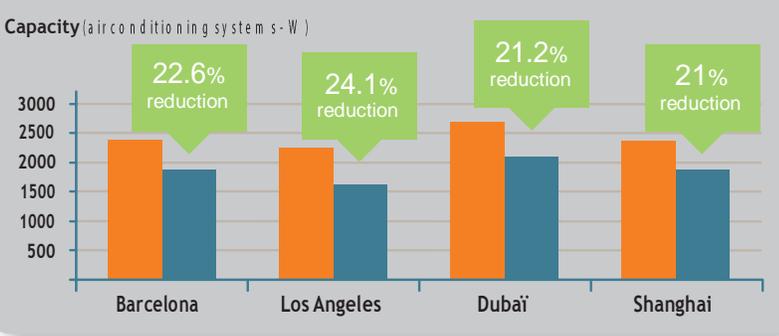
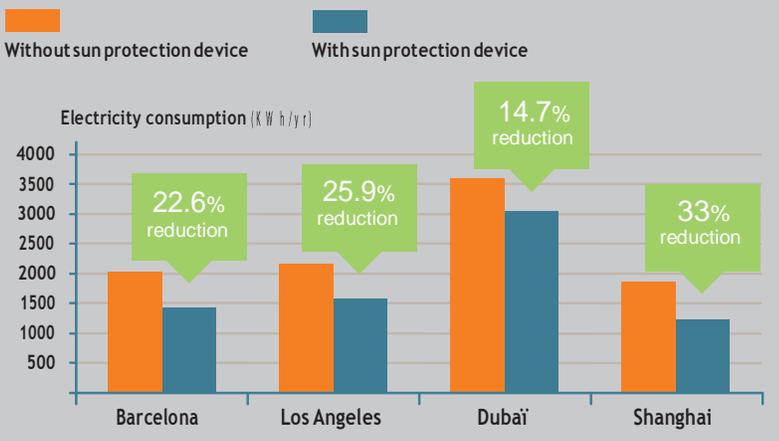
## Natural Ventilation

Natural ventilation is a cost-effective way of improving air quality in a building and cooling during the night, especially during summer months. Automating windows during the hours when a building is unoccupied means that a controlled flow of fresh air can pass through the façade, significantly reducing the accumulated temperature of the building mass and improving the quality of the indoor environment the following day.

Somfy solutions for natural ventilation include our line of window actuators that are linked to our Somfy Digital Network RS485™ (SDN) which automates the process to ensure a fresh air flow and heat dissipation during the summer months.

### Impact of automated sun protection devices on energy consumption (operational costs) and air conditioning system capacity (investment) in a hotel room.

Simulation carried out using the Somfy DISC tool, under the following conditions: Room measuring 425ft², with a double-glazed window measuring 67ft² (U = 0.27W/ft²). White PVC blind. The blind is lowered when the light level measured outside is above 15 Klux.



# VERTICAL MARKET SEGMENTS

There are many reasons for which commercial buildings are built or renovated. Buildings are needed for education, for work, for healing, and for relaxation. Somfy offers a wide array of solutions for any type of building, delivering benefits that are universally desirable for any functionality.

- Increased **thermal and visual comfort** aids the learning rate of students, creates a productive atmosphere for workers, provides comfort to customers, and fosters the well-being of patients. Everyone wants to benefit from as much natural light as possible, while at the same time avoiding glare and reflections.
- Optimized **energy performance** provides substantial energy savings and meets new environmental regulations by consuming less energy and natural resources. Saving money and protecting the environment are positives for any building owner and occupant.
- **Natural ventilation control** provides fresh air which is conducive to good health, and reduces the demand on HVAC resulting in energy savings.
- Rapid **return on investment** as a result of energy savings and reduced maintenance and operational costs.

“Natural light, proper ventilation, appropriate temperature and humidity rangers, or even localized controls lead to healthier environments.” *(Miller et al. 2009)*

## Somfy Solutions For Your Projects

Somfy has developed intelligent solutions for the operation of building openings and sun protection devices. These systems improve comfort for occupants while also reducing energy costs.

In this way, **Somfy contributes to the development of bioclimatic façades** for all types of buildings, regardless of function or architecture.

### ↘ Bioclimatic façades

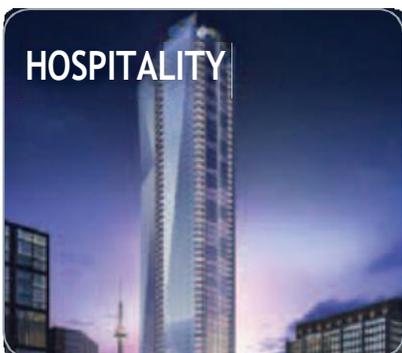
- **The façade** is the building's envelope, and acts as the interface between interior and exterior, and between the natural and artificial environments.
- **Outside:** climate conditions vary according to the seasons, the weather and changes in daylight hours.
- **Inside:** conditions must remain as stable and as comfortable as possible for all occupants, based on their activities, needs and preferences.
- The bioclimatic façade is a **living membrane** that continuously adapts to changes in the weather, and to occupants' changing needs.



## HESS TOWER — HOUSTON, TX

29-story  
845,000 sq. ft. office building  
1,575 Somfy ILT motors  
Completed: June 2011

Hess Tower, Houston, Texas. This certified LEED Gold building was completed in June of 2011 and features Somfy's ILT motor solution operating MechoSystems' solar shading. Somfy also supplied Intelligent Programmable Keypads for the solar shading operation.



## SHANGRI-LA TOWER — TORONTO, CN

65-story  
873,270 sq. ft hotel and luxury condominium  
680 Glydea™ drapery motors  
150 Sonesse® 50 ILT2 motors  
Completed: 2012

Toronto's 65 story Shangri-La Tower already dominates Canada's skyline and is one of the city's ten tallest buildings. Architect James Cheng opted to install Somfy automatic controls for curtains and sun screens. The 220 bedrooms and 353 apartments are fitted with Glydea™ and Sonesse® motors, installed by Solaractive.



## JOHN E. JAQUA ACADEMIC CENTER FOR STUDENT ATHLETES — PORTLAND, OR

3-story  
40,000 sq. ft.  
138 ILT2 motors controlled by Somfy Digital Network RS485™  
Completed: 2009

John E. Jaqua Academic Center, Eugene, Oregon. The academic center's double skin facade is made entirely of glass. Floor-to-ceiling Draper solar shades were motorized with Somfy's ILT2 intelligent motors installed on the exterior of the inner glass facade. The solar shades are controlled on the Somfy Digital Network™.



## UNIVERSITY OF PITTSBURGH MEDICAL CENTER — PITTSBURGH, PA

7-story  
220,000 sq. ft. expansion for patient care  
179 Sonesse® 30 RS485 integrated into bedside control  
Completed: 2009

University of Pittsburgh Medical Center (UPMC), Pittsburgh, PA. Draper solar shades were motorized utilizing Somfy's low voltage Sonesse® 30 RS485 solution. Shading controls were integrated into patient bed controls, enabling the patient to adjust the solar shades easily and immediately, without the assistance of nurses and medical personnel. The result: optimal visual and thermal comfort of the patient, lowering of maintenance costs, and reduced workload on hospital staff.

# OFFICES

## Optimizing comfort in the workplace at all times

“Companies that have invested in natural lighting retrofit to existing facilities have seen worker productivity jump between 13% and 16%” (*“Greening the Building and the Bottom Line”, Rocky Mountain Institute, 2009.*)

### Improve Thermal Comfort **SOMFYCAN!**

**Solution:** By combining occupancy and temperature sensors, Somfy's intelligent systems raise or lower blinds automatically, so that occupants benefit from a pleasant indoor temperature all year round without having to intervene in any way:

- > In summer, the goal is to reduce solar gains.
- > In winter, the aim is to capture free energy.

**Benefit:** Sudden variations in temperature are disruptive and tiring. Benefiting from constant thermal comfort improves personal well-being and productivity.

### Improve Visual Comfort **SOMFYCAN!**

**Solution:** By combining weather sensors, timers, centralized controls and individual controls, Somfy solutions can be used to:

- > Let natural light in and create savings by using less artificial lighting.
- > Filter brightness levels when using PCs, laptop computers, tablet computers, video conference screens, etc...

**Benefits:** Meeting rooms, open-plane offices, and individual offices... Each type of space requires its own type of lighting. This ensures visual comfort, which in turn optimizes occupant visual comfort, reduces fatigue levels and employee absenteeism.

### Improve Ventilation **SOMFYCAN!**

**Solution:** With Somfy's automatic systems, adapting the ventilation of a meeting room or a conference hall couldn't be simpler.

**Benefit:** Air quality, like temperature and light levels, is an essential component for comfort. It is monitored in order to help provide the best possible working conditions for occupants while also promoting their good health.

#### Preservation of the temperature

When it is hot...



When it is cold...



#### The 1/3/10 rule

With sun protection



Without sun protection



The difference in brightness between what the eye sees (30° angle) and a visual task (e.g. a sheet of paper) must be no more than a ratio of 1:3. The ratio is 1:10 for the difference between total perceived light (90° angle) and surfaces located within the field of vision (e.g. a window).

#### Air renewal

Ventilate...



for better air quality.





## Optimizing building's performance

“Gurtekin, Hartkopf and Loftness of Carnegie Mellon University reported average energy savings of 52% thanks to the use of high-performance daylighting systems.” *(Carnegie Mellon University - 2004)*

### Make the Most of Your Investments SOMFYCAN!

**Solution:** Somfy's centralized automation solutions are easy to integrate and operate, and help reduce running costs.

- > By reducing energy consumption (with savings of up to 10% on heating in winter, and indoor cooling gains of up to 16° F in summer).
- > By protecting external blinds from bad weather.
- > By ensuring all sun protection devices operate with gentle movements that extend their life spans.
- > By reducing the number of manual operations required, and therefore also the building's running costs.

**Benefits:** Ensuring profitability is an essential requirement for office buildings. These facilities must therefore be designed and built in such a way as to extend their lifetime. The high-quality design and manufacturing of Somfy solutions mean that buildings fitted with these solutions are assured optimum sustainability:

- > The bioclimatic façades enable architectural creativity that gives the building all its value.
- > The automatic systems can be used to align all sun protection devices, ensuring design of the façade.
- > The centralization systems are upgradeable, so they can be easily adapted to a change of activity within the building, or complying with changes in energy regulations.

### Save Energy SOMFYCAN!

**Solution:** The sensors and automatic devices used in Somfy solutions reduce energy consumption:

- > By prioritizing the use of natural light.
- > By reducing the solar gains in summer.
- > By adapting building openings to actual occupancy periods (taking account of variable working hours, weekends, etc...).

**Benefit:** Somfy offers Dynamic Insulation™ solutions, so that you no longer have to choose between comfort and energy savings

### Energy savings with automated sun protection devices

According to a simulation tool created by Lund University in Sweden, an investment of 1% to 2% of the total cost of the building results in energy savings of 20% to 40% (see table below).

 LUND UNIVERSITY	Electricity consumption (annual)	Cooling load reduction (in Watt)	Total savings on consumption (annual)
GENEVA (Switzerland)	Reduced by 32.81% (1.319 kWh compare to 1.963 kWh)	Reduced by 40.28% (1.644 W compare to 2.753 W)	At price of CHF0,19 kWh: CHF 122,36
NEW YORK (USA)	Reduced by 32.12% (1.712 kWh compare to 2.522 kWh)	Reduced by 39.84% (1.720 W compare to 3.859 W)	At price of US\$0,129 kWh: US\$ 104,49
NEW DELHI (India)	Reduced by 42.93% (3.111 kWh compare to 5.451 kWh)	Reduced by 49.64% (1.698 W compare to 3.372 W)	At price of INR 0,19 kWh: INR 444,6
SHANGHAI (China)	Reduced by 33.86% (1.711 kWh compare to 2.587 kWh)	Reduced by 40.29% (1.602 W compare to 2.683 W)	At price of RMB0,48 kWh: RMB 420,48

Simulation definition: A 18 m<sup>2</sup> office room, with 4 m<sup>2</sup> window glass (double glazing Low-E except for New Delhi and Shanghai Double glazing, Façade wall U-Value: 0,33 W/m<sup>2</sup>K), representing 70% of the room façade section, south oriented. Sun protection device is an internal grey PVC. The comparison is made between sun protection device and no sun protection device, depending on light level considering 2 persons occupying the room, equipped with 180 W artificial lighting (detailed analysis available on demand).

# HOSPITALITY

## Providing new services

“In our 300 rooms, motorized curtains produce savings on maintenance and cleaning, operational costs — due to remote control — and personnel (less time spent in the room), not forgetting the look of the place as they require less manual intervention.” *(Hotel chain development manager)*

### Improve thermal and visual comfort

**SOMFYCAN!**

**Solution:** With Somfy control units and devices, it is possible to:

- > Automate curtains to keep a cool interior.
- > Filter natural light to rest or work in the room.
- > Block light out completely (night blackout curtain).

**Benefit:** In rooms, reception, or meeting areas, keeping temperature at a constant level and controlling natural light are key factors in perceived comfort.

### Offer more privacy and new aesthetic atmospheres

**SOMFYCAN!**

**Solution:** Integral and invisible components of the design, Somfy solutions give everyone the possibility of protecting privacy, creating new atmospheres and designing the hotel's living areas:

- > Perfectly protect private space by controlling motorized blinds and/or curtains.
- > Alter a room's atmosphere by changing the angle of slats on Venetian blinds.
- > Partition off a room by opening and closing interior curtains.

**Benefit:** Far removed from old-fashioned decoration, the hotel is now a “living organism,” sparking off new emotions.

### Offer personalized services

**SOMFYCAN!**

**Solution:** With automated and remote controlled solutions, everyone can take advantage of the benefits of technology and complete freedom. Occupants live at their own pace; they adapt the hotel's structure to their desires through simple control.

**Benefit:** Your clients are unique, and as such their preferences are also unique.

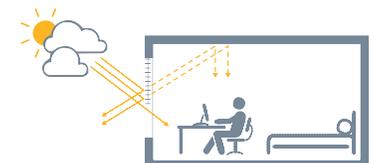
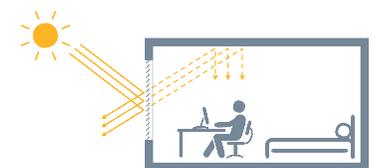
#### Thermal and visual comfort



Managed locally by occupant via a remote control.



#### Automated blinds



Somfy's system can raise or lower blinds automatically so that occupants benefit from a pleasant indoor temperature.



## Improving the building's energy performance

“Electricity use accounts for 60-70 % of the utility costs of a typical hotel. Energy-efficient lighting can reduce electricity use up to 75 %.” (Source California Hotel & Lodging Association)

### Save energy

**SOMFYCAN!**

**Solution:** The sensors and automatic devices used in Somfy solutions reduce energy consumption:

- > By prioritizing the use of natural light.
- > By reducing solar gains in the summer.
- > By adapting building openings to actual occupancy periods (tourist season, seminar times, etc...).

**Benefit:** Somfy offers Dynamic Insulation™ solutions so that you no longer have to choose between comfort offered to customers and energy savings.

### Make the most of your investments

**SOMFYCAN!**

**Solution:** Somfy's centralized automation solutions are easy to integrate and operate and help reduce running costs:

- > By limiting energy consumption and savings of up to 10% on heating in winter time and indoor cooling gains of up to 16° F in summer.
- > By protecting external blinds from bad weather.
- > By reducing manual intervention on curtains and sun protections, extending their life spans.
- > By reducing the number of manual operation required and therefore also room services running costs.

**Benefit:** Ensuring profitability is a major requirement for the luxury hospitality sector. Buildings should be designed and built to reduce their operating cost and lengthen their lifespan.

### Extend buildings' lifespans

**SOMFYCAN!**

**Solution:** Somfy solutions provide a bioclimatic design that will enhance the lifespan of a building by providing sustainable solutions:

- > The bioclimatic façades enable architectural creativity that gives the building all its value.
- > Automatic devices perfectly align sun protections to guarantee the façade's aesthetic appeal.
- > Centralization systems can be easily adapted to changes in activities or in energy regulations.
- > The solutions are easily integrated into renovation projects (meeting and conference rooms, etc...).

### Energy savings with automated sun protection devices

According to simulation tool created by Lund University in Sweden, an investment of 1% to 2% of the total cost of the building results in energy savings of 20% to 40% (see table below).

 LUND UNIVERSITY	Electricity consumption (annual)	Cooling load reduction (in Watt)	Total savings on consumption (annual)
BARCELONA (Spain)	reduced by 22.6% (1446 kWh compare 2006 kWh)	reduced by 22.6% (1884 W compare 2435 W)	at a price of €0,16/kWh : € 89,6
LOS ANGELES (USA)	reduced by 25.9% (1594 kWh compare 2151 kWh)	reduced by 24.1% (1678 W compare 2212 W)	at a price of US\$ 0.11 / kWh : US\$ 61
DUBAI (United Arab Emirates)	reduced by 14.7% (3038 kWh compare 3560 kWh)	reduced by 21.2% (2124 W compare 2694 W)	at a price of AED 0,3 / kWh : AED 156,6
SHANGAI (China)	reduced by 33% (1220 kWh compare 1830 kWh)	reduced by 21% (1876 W compare 2373 W)	at a price of Yuan 0,65 / kWh : Yuan 396,5

Simulation conditions: hotel room measuring 39.5 m<sup>2</sup>, with a 6.2 m<sup>2</sup> window (double glazing, U: 2.88 W/m<sup>2</sup>Kg; 0.77), white PVC sun protection awning and comparison with automatic sun protection or not, depending on the luminosity (details of the analysis available on demand).

## Making everyone's working environment more comfortable

“In a study performed over the course of an academic year in San Juan Capistrano, California, students who benefited from more natural lighting in their classrooms achieved scores that were 20% higher in mathematics tests and 26% higher in reading tests than students whose classrooms had less natural light.” (David Hobstetter – “Daylighting and productivity: a study of the effects of the indoor environment on human function” - 2007)

### Improve thermal comfort SOMFYCAN!

**Solution:** With Somfy, sun protection devices are automatically activated:

- > When it's hot, in order to protect the classroom from the sun's rays.
- > When it's cold, in order to keep heat in the building when it's empty.
- > These automatic devices can also be managed locally by occupants via a remote control.

**Benefit:** Classrooms that are too hot or too cold impact concentration and prevent effective teaching.

### Improve visual comfort SOMFYCAN!

**Solution:** By combining weather sensors, timers, and centralized controls, Somfy solutions can be used to:

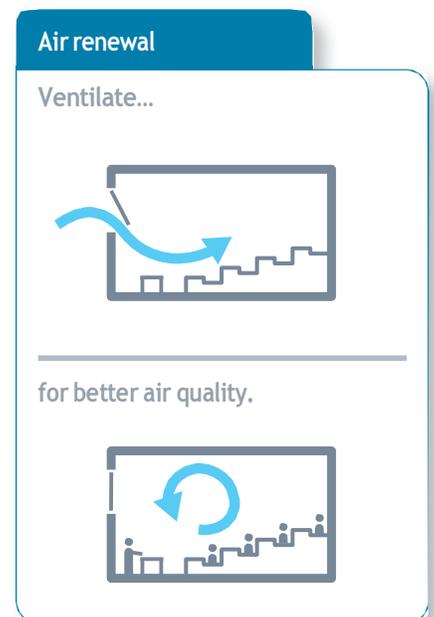
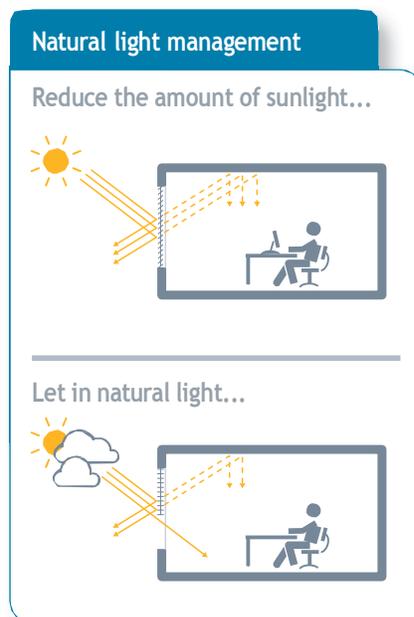
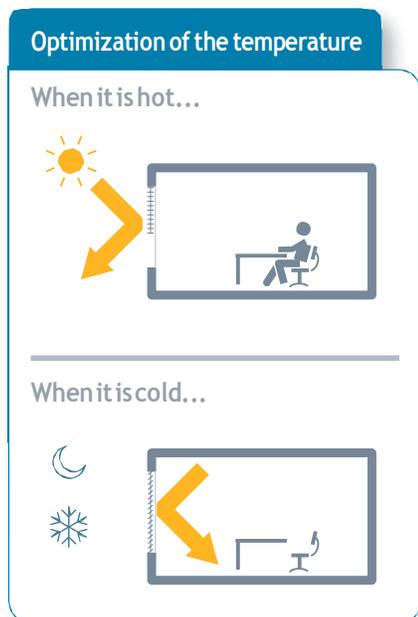
- > Limit the amount of sunlight entering rooms where monitors are used.
- > Let in the right amount of natural light during lessons.
- > Filter brightness levels according to the sun's position.

**Benefit:** Classrooms, lecture halls, laboratories... Each type of space requires its own type of lighting in order to optimize occupant comfort according to their activities.

### Improve ventilation SOMFYCAN!

**Solution:** With Somfy's automatic systems, adapting the ventilation of a conference hall according to the number of occupants or airing a sports hall couldn't be simpler.

**Benefit:** Air quality, like temperature and light levels, is an essential component for comfort. It is monitored in order to help occupants achieve the best possible results.





## Improving building performance

“Gurtekin, Hartkopf and Loftness of Carnegie Mellon University reported average energy savings of 52% through the use of high-performance daylighting systems.” *(Carnegy Mellon University - 2004)*

### Save energy SOMFYCAN!

**Solution:** The sensors and automatic devices used in Somfy solutions reduce energy consumption:

- > By prioritizing the use of natural light.
- > By reducing solar gains in summer.
- > By adapting building openings to occupancy periods (variable lesson times, school holidays, etc...).

**Benefit:** Today, thanks to Dynamic Insulation™ we can create energy savings without compromising occupants' comfort.

### Maximize return on investment SOMFYCAN!

**Solution:** Somfy centralized automation solutions are easy to integrate and operate and help decrease operating costs:

- > By reducing energy consumption.
- > By reducing the number of manual interventions required.
- > By improving security and reducing damage and vandalism.

**Benefit:** The investments made in the construction of educational buildings are often significant. These facilities must therefore be designed and built in such a way as to extend their lifetime.

### Extend buildings' lifespans SOMFYCAN!

**Solution:** Somfy solutions provide a bioclimatic design that will enhance the lifespan of a building by providing sustainable solutions:

- > Weather sensors automatically retract awnings in order to protect them from storms, reducing maintenance costs.
- > The motors installed ensure gentle movements that extend the life of blinds.
- > Centralization systems can be easily adapted to meet changes in regulations.

**Benefit:** The high-quality design and manufacturing of Somfy solutions mean that buildings fitted with these solutions ensure years of efficient service.

### Energy savings with automated sun protection devices

According to simulation tool created by Lund University in Sweden, an investment of 1% to 2% of the total cost of the building results in energy savings of 20% to 40% (see table below).

LUND UNIVERSITY	Electricity consumption (annual)	Cooling load reduction (in Watt)	Total savings on consumption (annual)
NICE (France)	reduced by 22.6% (1446 kWh compare 2006 kWh)	reduced by 28.3% (7.796 W compare to 10,872 W)	At price of €0,11 / kWh: €301,4
SAN DIEGO (USA)	reduced by 25.9% (1594 kWh compare 2151 kWh)	reduced by 42.76% (7.890 W compare to 10,841 W)	At price of US\$ 0.129 / kWh: US\$ 374.35.
ABU DHABI (UAE)	reduced by 14.7% (3038 kWh compare 3560 kWh)	reduced by 33.46% (7.631 W compare to 11,468 W)	At price of AED 0,11/kWh: AED 556,16
SHANGHAI (China)	reduced by 33% (1220 kWh compare 1830 kWh)	reduced by 26.9% (7,244 W compare to 9,909 W)	At price of RMB 0,48/kWh: RMB 1091,04

Simulation definition: A 86,4m<sup>2</sup> school room, with 18,52m<sup>2</sup> window glass (double glazing Low-E except for Abu Dhabi and Shanghai Double glazing, Façade wall U-Value: 0,33 W/m<sup>2</sup>K), representing 60% of the room façade section, south oriented. Sun protection device is an internal grey PVC. The comparison is made between sun protection device and no sun protection device, depending on light level considering 35 persons occupying the room, equipped with 864 W artificial lighting (detailed analysis available on demand).

## Taking care of everyone's well-being

“Natural lighting reduces depression among patients and improves sleep and heart rhythm, which in turn reduces restlessness, relieves pain and improves working conditions for staff.”

*(Doctor Anjali Joseph, Center for Health Design, 2008)*

### Adapt to meet individual needs

#### SOMFYCAN!

**Solution:** Sun protection devices, managed by Somfy control systems, work to adapt the building to the activities of each of its occupants.

**Benefit:** Patients and healthcare personnel alike benefit from better conditions.

### Improve thermal and visual comfort for patients

#### SOMFYCAN!

**Solution:** By using Somfy control systems, patients can manage their own sun protection devices without moving from their bed and without disturbing anyone else in order to:

- > Filter natural light.
- > Protect their privacy.
- > Stay in control of their comfort at all times by overriding the automatic systems.

**Benefit:** The well-being of occupants, however long their stay in the hospital, is an absolute priority, especially as increased thermal and visual comfort can have a positive influence on their health.

### Help healthcare personnel to work in the best possible conditions

#### SOMFYCAN!

**Solution:** By combining weather sensors, timers, and centralized controls, Somfy solutions assist personnel by:

- > Providing the visual comfort they need to work effectively (e.g. for examining an X-ray on a viewing screen).
- > Eliminate repetitive tasks, such as lowering awnings across a floor of a retirement home when the sun is too bright.

**Benefit:** To ensure optimum availability, each and every member of staff must be able to give the best of themselves in an environment conducive to care.



### Natural light management

#### Reduce sunshine...



#### Let daylight in...





## Ensuring the building's performance

“Healthcare establishments use 3 to 5 times more “energy” than the average commercial building.” (Source IEA, 2008)

### Save energy SOMFYCAN!

**Solution:** The sensors and automatic devices used in Somfy solutions reduce energy consumption:

- > By prioritizing the use of natural light.
- > By limiting energy leakage from the indoors in winter.
- > By reducing the amount of solar heat absorbed in summer.

**Benefit:** Today, thanks to Dynamic Insulation™, we can save energy without compromising the comfort of patients and healthcare personnel thermal and visual comfort can have a positive influence on their health.

### Ensure profitable investments SOMFYCAN!

**Solution:** Somfy's centralized automation solutions are easy to integrate and operate and help ensure a rapid return on investment:

- > Decrease healthcare expenditures: patients who benefit from greater comfort take fewer pain medications (22% less according to impact of light\*) and are hospitalized for noticeably short periods.
- > Reduce the number of manual interventions required, and therefore also reduce the building's running costs.

**Benefit:** Ensuring profitability is a major requirement for healthcare establishments.

### Extend buildings' lifespans SOMFYCAN!

**Solution:** The high-quality design and manufacturing of Somfy solutions mean that buildings fitted with these solutions ensure years of efficient service:

- > Weather sensors automatically retract awnings in order to protect them from storms, thus reducing maintenance costs.
- > The motors installed ensure gentle movements that extend the life of blinds.
- > Centralization systems can be easily adapted to meet changes in regulations.

**Benefit:** Managing expenses is a key concern. Equipment installed must therefore anticipate future changes in order to enhance the building's lifetime.

### Energy savings with automated sun protection devices

According to simulation tool created by Lund University in Sweden, an investment of 1% to 2% of the total cost of the building results in energy savings of 20% to 40% (see table below).

LUND UNIVERSITY	Electricity consumption (annual)	Cooling load reduction (in Watt)	Total savings on consumption (annual)
PARIS (France)	reduced by 39.6% (743 kWh compare to 1.231 kWh)	reduced by 39.7% (1.390 W compare to 2.306 W)	at price of € 0,11 kWh: € 53,68
SAO PAULO (Brazil)	reduced by 28.52% (1759 kWh compare to 2461 kWh)	reduced by 38.53% (1822 W compare to 2964 W)	at price of R\$ 0.3 kWh: R\$ 210.6
BARCELONA (Spain)	reduced by 40.3% (1.604 kWh compare to 2.689 kWh)	reduced by 42.05% (1.534 W compare to 2.647 W)	at price of € 0,14 kWh: € 151,90
STOCKHOLM (Sweden)	reduced by 44.98% (795 kWh compare to 1.445 kWh)	reduced by 43,95% (1.227 W compare to 2.189 W)	at price of € 0,15/kWh: € 91

Simulation definition: A 25 m<sup>2</sup> patient room, with 7 m<sup>2</sup> window glass (double glazing Low-E except for Sao Paulo Double glazing, Façade wall U-Value: 0,33 W/m<sup>2</sup>K), representing 50% of the room façade section, south oriented. Sun protection device is an internal grey PVC. The comparison is made between sun protection device and no sun protection device, depending on light level considering 1 person occupying the room, equipped with 250 W artificial lighting (detailed analysis available on demand).

\* The impact of light on outcomes in healthcare settings. August 2006, Anjali Joseph, Ph.D.

# LEED FACTS

Somfy is one of your key partners for LEED certification. Somfy solutions for building automation of shading and natural ventilation devices create a bioclimatic façade. By interacting with outside elements to best utilize natural light and air while providing thermal and visual comfort, Somfy solutions contribute to energy savings, occupant comfort and design innovation.

Somfy solutions provide the opportunity to obtain up to 19 LEED points on a new construction project, and up to 22 LEED points on a major renovation. Our dedicated teams around the world based in 54 countries and all connected to our International Specification structure, are available to discuss the possibilities for your specific project needs.

LEED Facts  
REGIONAL PRIORITY: 4Pts

LEED Facts  
WATER EFFICIENCY: 10Pts

LEED Facts  
MATERIAL & RESOURCES: 14Pts

LEED Facts  
SUSTAINABLE SITES: 26Pts



Credit 8 (1Pt)  
**Light Pollution Reduction:**  
Somfy to contribute towards 1 point with automated solutions for shading devices; eliminating light pollution by blocking artificial light to the outside during evening hours.

LEED Facts  
INNOVATION & DESIGN: 6Pts



Credit 1.1 (1 to 5Pts)  
**Innovation & Design:**  
Somfy to contribute towards 1 point by educating the project team members about green building design and construction, the LEED requirements and application process early in the design phase.

LEED Facts  
ENERGY & ATMOSPHERE: 35Pts



Credit 1 (1 to 19Pts)  
**Energy & Atmosphere:**  
Somfy to contribute towards 11 points by helping to optimize the energy savings of the artificial lighting systems and HVAC.

LEED Facts  
INDOOR ENVIRONMENTAL  
QUALITY: 15Pts



Credit 2 (1Pt)  
**Increase Ventilation:**  
Somfy to contribute towards 1 point by allowing natural ventilation (operable windows) during cool day and/or by night cooling.

Credit 6.1 (1Pt)  
**Controllability of Systems-Lighting:**  
Somfy to contribute towards 1 point through the management of scenes between the lighting and solar protection systems.

Credit 6.2 (1Pt)  
**Controllability of Systems-Thermal Comfort:**  
Somfy to contribute towards 1 point by Dynamic Insulation™ solution interacting with the heating and cooling systems.

Credit 7.1 (1Pt)  
**Thermal Comfort-Design:**  
Somfy to contribute towards 1 point by helping to create the design of the building envelope for thermal comfort.

Credit 8.1 (1Pt)  
**Daylight & Views-Daylight: Views for 75% of the Space:**  
Somfy to contribute towards 1 point by increasing natural light levels while controlling glare and contrast.

Credit 8.2 (1Pt)  
**Daylight & Views-Daylight: Views for 90% of the Space:**

**TOTAL PROJECT:** contribute towards 1 point by 100 base POINTS, 6 possible Innovation & Design in Design and 4 regional Priority points for outside Somfy to Contribute towards 12 to 19 LEED (perforated, points (10.9% to 17.2%) & allowing 6 credits).  
Somfy to contribute towards 6 Pts.

# SOMFY LEED REFERENCE



## Abu Dhabi Financial Center (ADFC)

- Date: July 2010
- Type: Office
- Controls: Animeo Lon Subnet
- Quantity: 1780
- Gold LEED Certification



## MGM City Center's VDARA Towers

- Date: November 2009
- Type: Hospitality
- Applications: Roman Shades
- Motors: Sonesse 50 RTS  
Quantity: 9000
- Controls: Customized DecoFlex RTS Wall Switches  
Quantity: 2200
- Gold LEED Certification

### SUSTAINABLE SITES: 26 Pts

Credit 8 (1Pt)

#### Light Pollution Reduction:

To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments.  
> Somfy to contribute towards 1 Pt.

### WATER EFFICIENCY: 10 Pts

### ENERGY & ATMOSPHERE: 35 Pts

Credit 1 (1 to 19Pts)

#### Optimize Energy Performance:

To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.  
> Somfy to contribute towards 4 to 11 Pts.

### MATERIAL & RESOURCES: 14 Pts

### INDOOR ENVIRONMENTAL QUALITY: 15Pts

Credit 2 (1Pt)

#### Increase Ventilation:

To provide additional outdoor air ventilation to improve indoor air quality (IAQ) and promote occupant productivity, comfort, and well-being.

Credit 6.1 (1Pt)

#### Controllability of Systems-Lighting:

To provide a high level of lighting system control by individual occupants or groups in multi-occupant spaces (e.g., classrooms and conference areas) and promote their productivity, comfort, and well-being.

Credit 6.2 (1Pt)

#### Controllability of Systems-Thermal Comfort:

To provide a high level of thermal comfort system control by individual occupants or groups in multi-occupant spaces (e.g., classrooms or conference areas) and promote their productivity, comfort and well-being.

Credit 7.1 (1Pt)

#### Thermal Comfort-Design:

To provide a comfortable thermal environment that promotes occupant productivity, comfort and well-being.

Credit 8.1 (1Pt)

#### Daylight & Views-Daylight: Views for 75% of the space:

To provide building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Credit 8.2 (1Pt)

#### Daylight & Views-Daylight: Views for 90% of the space:

To provide building occupants a connection to the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.  
> Somfy to contribute towards 6 Pts.

### REGIONAL PRIORITY: 4 Pts

### INNOVATION & DESIGN: 6 Pts

Credit 1.1 (1 to 5Pts)

#### Innovation & Design:

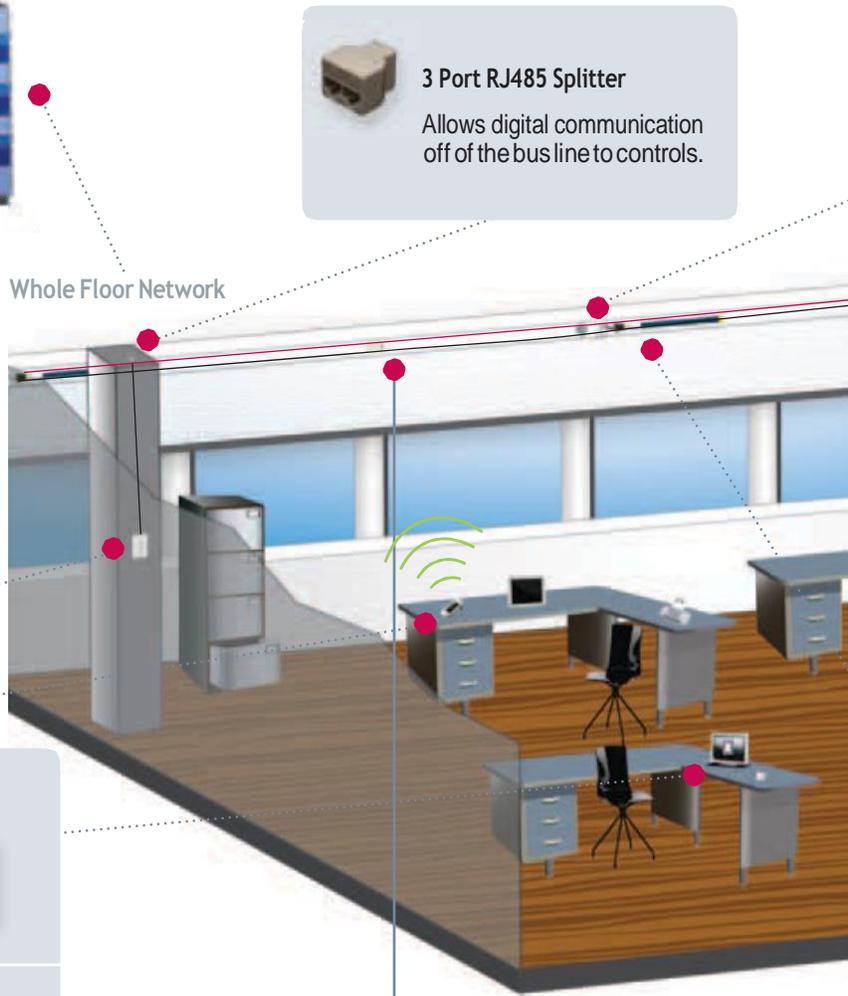
To provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.  
> Somfy to contribute towards 1 Pt.

### Additional LEED Certified Somfy Projects

Vancouver Convention Centre	Vancouver, BC	LEED Platinum	MedImpact Healthcare HQ	San Diego, CA	LEED Gold	Aerocentre V	Mississauga ON	LEED Gold
California Lottery	Sacramento, CA	LEED Gold	Hess Tower	Houston, TX	LEED Gold	Royal Bank Tower	Toronto, ON	LEED Gold
LA Fireman's Fund Credit Union	Pasadena, CA	LEED Platinum	One Erdman Place	Madison, WI	LEED Gold	Telus Tower	Toronto, ON	LEED Gold
Hyundai Finance	Irvine, CA	LEED Gold	Shangri-La Hotel	Toronto, ON	LEED Gold			

# SOMFY DIGITAL NETWORK RS485™ — LINE VOLTAGE

Scalable Multi-Floor Solution



 **3 Port RJ485 Splitter**  
Allows digital communication off of the bus line to controls.

Digital Keypad	Wireless Keypad	Virtual Keypad
		
<ul style="list-style-type: none"> <li>• Fully programmable</li> <li>• Individual motor and motor group functionality</li> <li>• Up to five preset positions and full up, down, stop functionality</li> </ul>		

 **RTS to SDN Receiver**  
Plugs into RS485 bus line to convert radio signals into Somfy Digital Network commands.



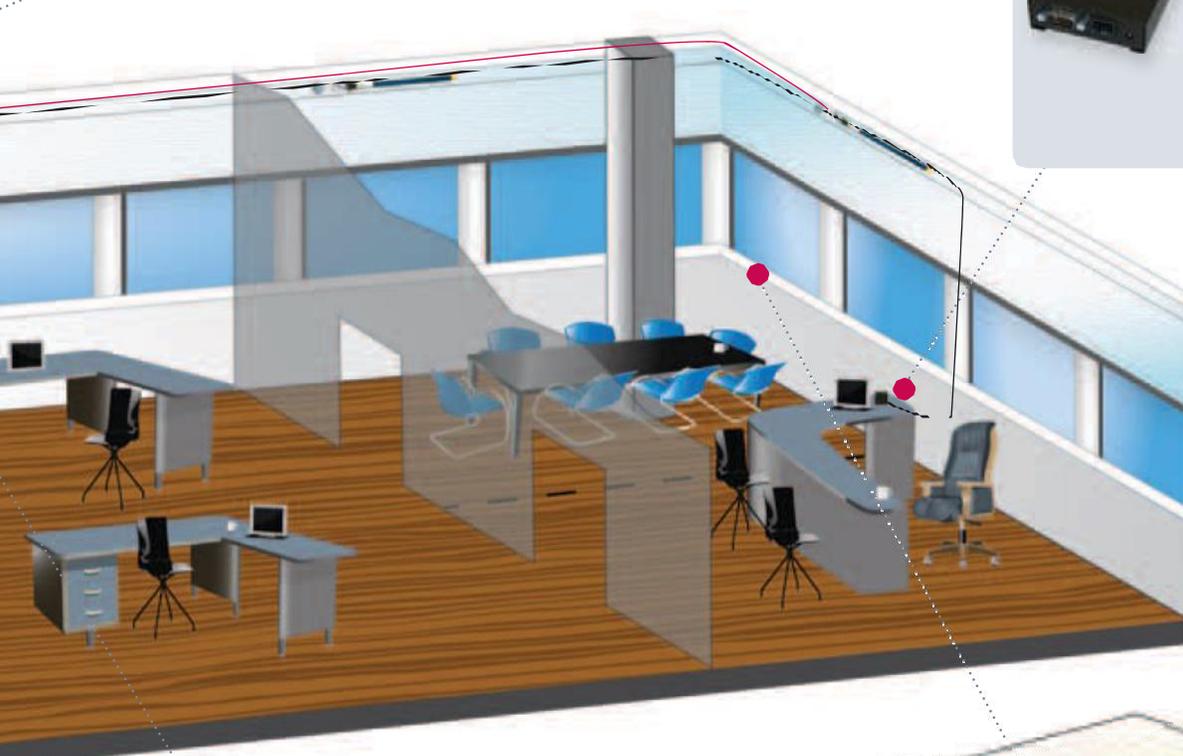
Somfy line voltage solutions are available for any application from a single room to an entire floor to a total multi-floor building network. These designs are easily scalable on the RS485 network.

Somfy line voltage solutions featuring the intelligent Sonesse® 50 ILT motor line offer ultra-quiet operation along with the heavy duty ability to take on a large load that low voltage solutions could not handle. Somfy's line voltage motors and accessories are a stand alone solution, or can also be plugged into the same bus communication with our low voltage motors, providing the most flexible complete network solution available.



#### IP Interface

- Provides connection from the Somfy Digital Network to the building network
- Can be placed anywhere in the building



#### Sonesse® 50 ILT

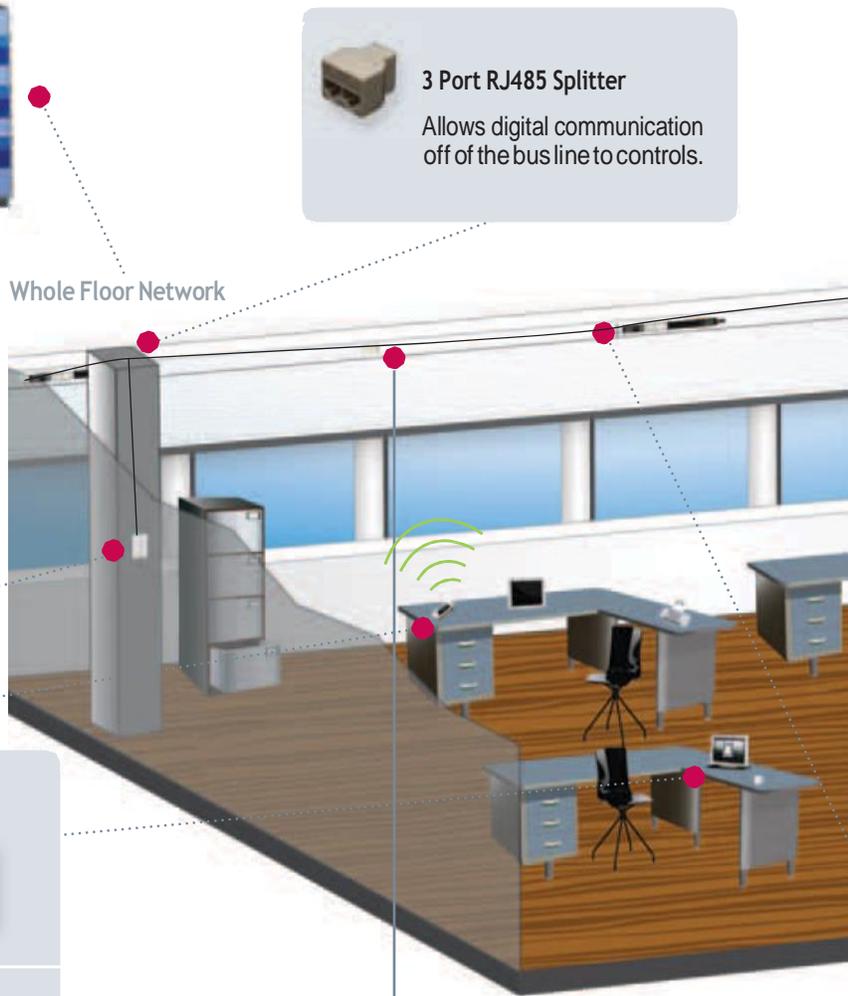
- Ultra-quiet operation
- Wide range of control options
- Fully programmable
- Plugs into standard outlet



Single Room Solution

# SOMFY DIGITAL NETWORK RS485™ — LOW VOLTAGE

Scalable Multi-Floor Solution



 **3 Port RJ485 Splitter**  
 Allows digital communication off of the bus line to controls.

Whole Floor Network

Digital Keypad	Wireless Keypad	Virtual Keypad
		
<ul style="list-style-type: none"> <li>• Fully programmable</li> <li>• Individual motor and motor group functionality</li> <li>• Up to five preset positions and full up, down, stop functionality</li> </ul>		

 **RTS to SDN Receiver**  
 Plugs into RS485 bus line to convert radio signals into Somfy Digital Network commands.



Somfy low voltage solutions are available for any application from a single room to an entire floor to a total multi-floor building network. These designs are easily scalable on the RS485 network.

Somfy low voltage solutions featuring the intelligent Sonesse® 30 RS485 motors offer ultra-quiet operation along with greater torque than other low voltage options offered by industry competitors. Somfy low voltage motors and accessories are a stand alone solution, or can also be plugged into the same bus communication with our line voltage motors, providing the most flexible complete network solution available.



#### Power Distribution

- Low voltage transformer
- Control box for communications
- Provides motor power on CAT5 wiring



#### IP Interface

- Provides connection from the Somfy Digital Network to the building network
- Can be placed anywhere in the building



#### Sonesse® 30 RS485

- Ultra-quiet operation
- Wide range of control options
- Fully programmable
- Powered off of the bus line



Single Room Solution

## CASE STUDIES



### **United Nations Secretariat Building**

United Nations Plaza · New York, NY 10017

# UNITED NATIONS

<b>Application:</b>	Renovation
<b>Sector:</b>	Commercial
<b>Market:</b>	Office
<b>Fabricator:</b>	Mariak
<b>Architect:</b>	HLW Architects
<b>Dealer:</b>	City View Blinds
<b>Contractor:</b>	Skanska
<b>Motors &amp; Qty:</b>	Sonesse® 30 RS485 Quantity 5000
<b>Controls:</b>	350 motor control panels 1,000 Somfy Digital Network RS485™ Digital Keypads

## The Challenge:

In the United Nations Secretariat Building, Somfy was challenged to scale a solution to an enormous office space where several thousand blinds over dozens of floors would be automated to provide glare control throughout the day and also allow local control to the building's occupants.

## The Solution:

Mariak provided window blinds that were installed by City View Blinds and commissioned by Somfy Systems for the 2012 renovation of this iconic building in New York City. The blinds are automated on the Somfy Digital Network RS485™ and move to a timed schedule based on the path of the sun with input from Somfy Sunis WireFree™ sun sensors, providing maximum natural light while eliminating bothersome glare for UN employees.

## Benefits:

Intelligent keypads were installed for each motorized window treatment, enabling office personnel to choose from five different preset slat angles, or close them completely. Janitorial services have easy access to intelligent keypads that will bring the blinds up completely for ease of cleaning and maintenance. During off hours, the motorized treatments revert back to the automated mode that reacts to the time of day and sunlight levels, ensuring the most efficient system operation throughout the building while being easily adjusted for personal preferences.



