



Intelligent  
Sun Control

**HunterDouglas**   
Architectural



## *Intelligent Sun Control Systems*

### Key features :

- A highly versatile system for controlling all types of motorised Solar Protection devices, applicable from simple configurations to operate a conference room to complete buildings.
- Offers individual, group and central control through different input devices, like switches, remote controls, touch screen, sensors, computer etc.
- Proven stability and reliability in a great number of projects.
- Simple to understand and configure, thanks to a modular build-up.
- Can be reprogrammed and extended after commissioning, in order to accommodate changes in building occupancy and space lay-out.
- Easy to integrate in higher level Building Automation Systems, that control other facilities like lighting and air-conditioning.
- Sophisticated features like precision tilting of vanes and louvers, addressing each solar protection device (spd) through programmable controllers, feedback from spd's to the central computer, incorporation of various sensors etc., allow for the design of pre-set scenes and advanced sun-tracking.
- High accuracy in tilting angles and up/down stops ensure uniform alignment of different sun protection devices along the same façade.
- Override privileges can be assigned to individual users and/or can give priority to emergency signals.



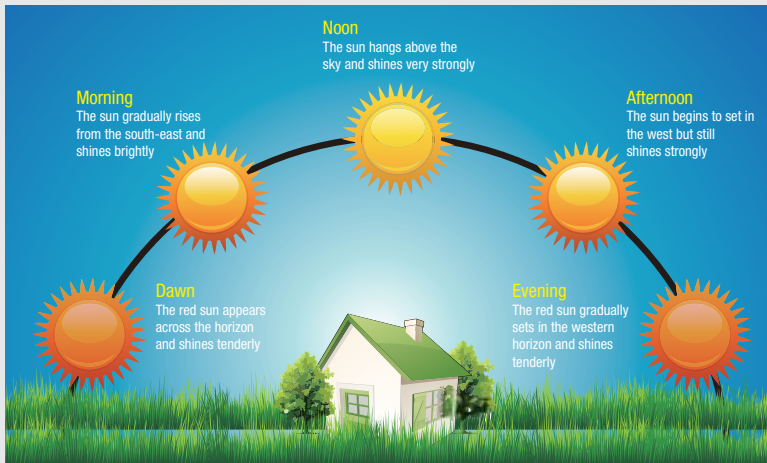
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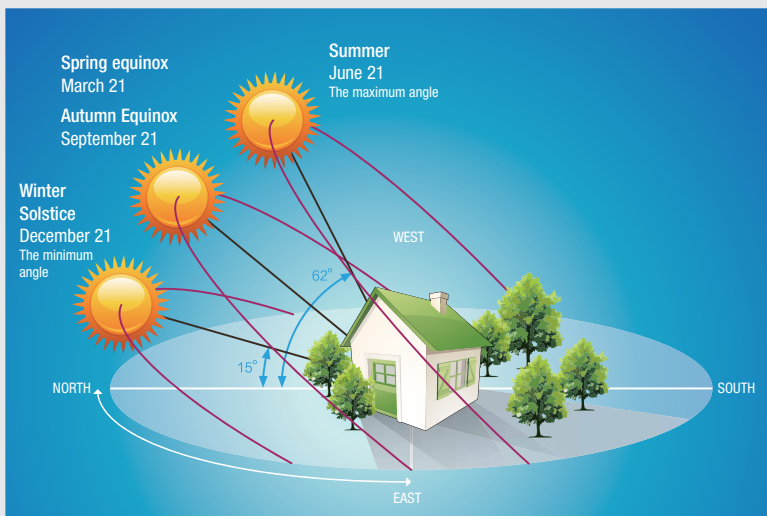
# Ensuring Visual and Thermal Comfort

Temperature and light in any building are mainly determined by the sun, and the intensity of its radiation can vary greatly in function of geography, season, weather or time of day, as the diagrams below show.

## SOLAR CYCLE DIAGRAMS



TRAJECTORY OF THE SUN THROUGHOUT THE DAY



SEASONAL SOLAR CYCLE

Because of the variances in solar radiation illustrated above, effective solar protection systems cannot be static but have to be dynamic and follow the solar cycles. They also have to take into account that the intensity of the sunlight is not the same for the whole building, but differs per façade, per floor, per room or even according to the perception of individual user.

This is why Hunter Douglas not only is dedicated to developing innovative and fully adjustable solar protection products, but also the systems that can control them in a comprehensive way to manage heat gain and light intensity in the whole building, depending on its occupancy and usage.

## LIGHT CONTROL

Research has established that the natural sunlight is the best light source for a healthy work and life environment and that optimal luminance levels for office work are between 500 lux and 1500 lux.

Light heating the outside of the building may vary from 1000 lux to 100000 lux depending on the façade orientation, cloudiness and geographical location.

Consequently, the quality of sunlight entering the building needs to be dynamically controlled, in order to create optimal working conditions.

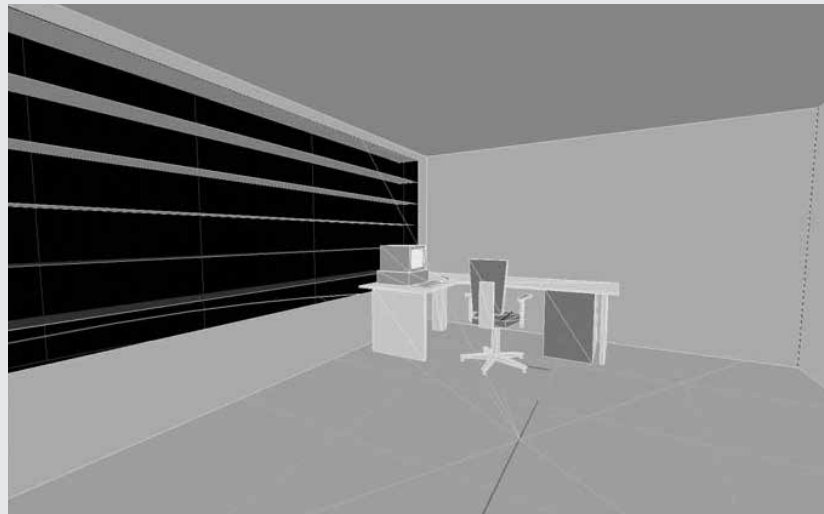
## CLIMATE CONTROL

Nowadays, buildings are designed to minimise heat transfer between the inside and outside, whilst maximising the efficiency of Heating, Ventilation and Air Conditioning systems (HVAC). In cold climates, especially during winter months, motorised Solar Protection devices can be set open to take advantage of the solar heat gains, whereas in the hotter climates, during summer, they adjust to closed position, thus minimising or even blocking the effects of the direct sun.

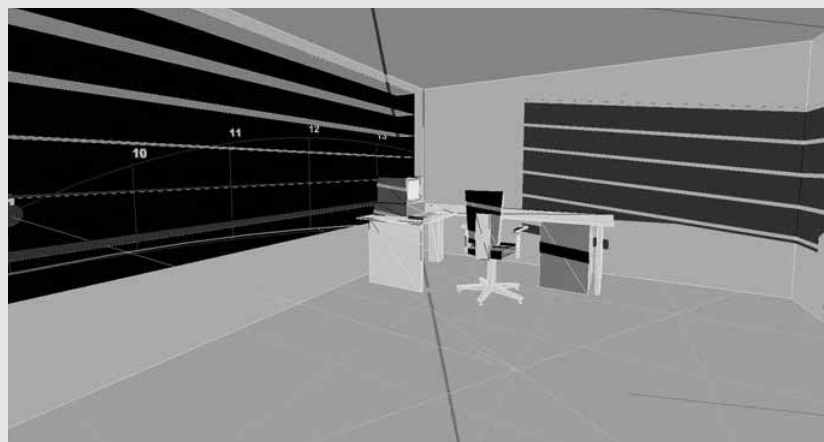
By managing the entry of direct or indirect sunlight, EOS™ Intelligent Control Systems help to avoid overheating of the building. In this way the efficiency of the building's internal climate controls systems increases, while energy consumption and CO2 emissions are reduced.

## DESIGN, FUNCTIONALITY, COMFORT

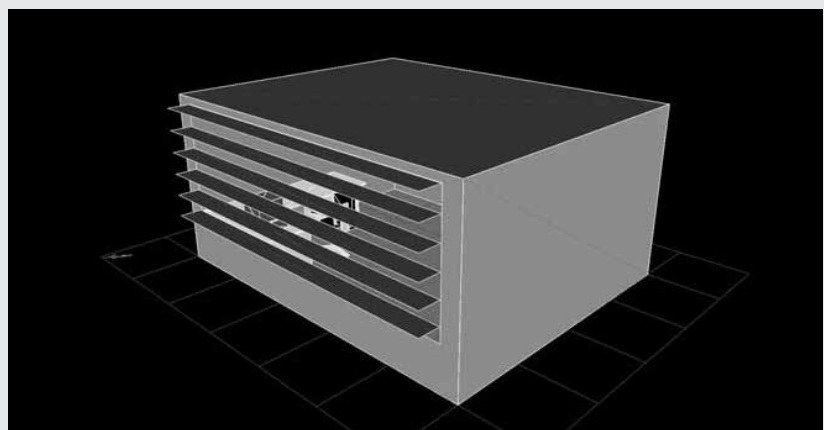
In the same way Hunter Douglas Sun Louvers and Window Covering Products can enhance the design of a building, our Intelligent Sun Control systems enhance its functionality. By managing heat gains, light, glare and exposure, Hunter Douglas provides sustainable solutions for a comfortable and more productive internal environment.



Internal view 12:00 AM, April 1st



Internal view 9:00 AM, December 1st



External view 9:00 AM, December 1st

# Infinite Configurations

EOS™ is the name of a modular range of programmable group controllers, switches, touch screens, remote controls, relays, time switch, receivers, sensors and dedicated servers, that can be infinitely combined to create a made-to-measure system for controlling any combination of blinds and adjustable sun louvers. Hunter Douglas solar protection products can be operated individually, in small or big groups, per façade or part of a building, depending on the wishes of each owner or tenant. Systems can work stand-alone or be integrated into one whole and even be reprogrammed if the use of a building would vary over its lifecycle.

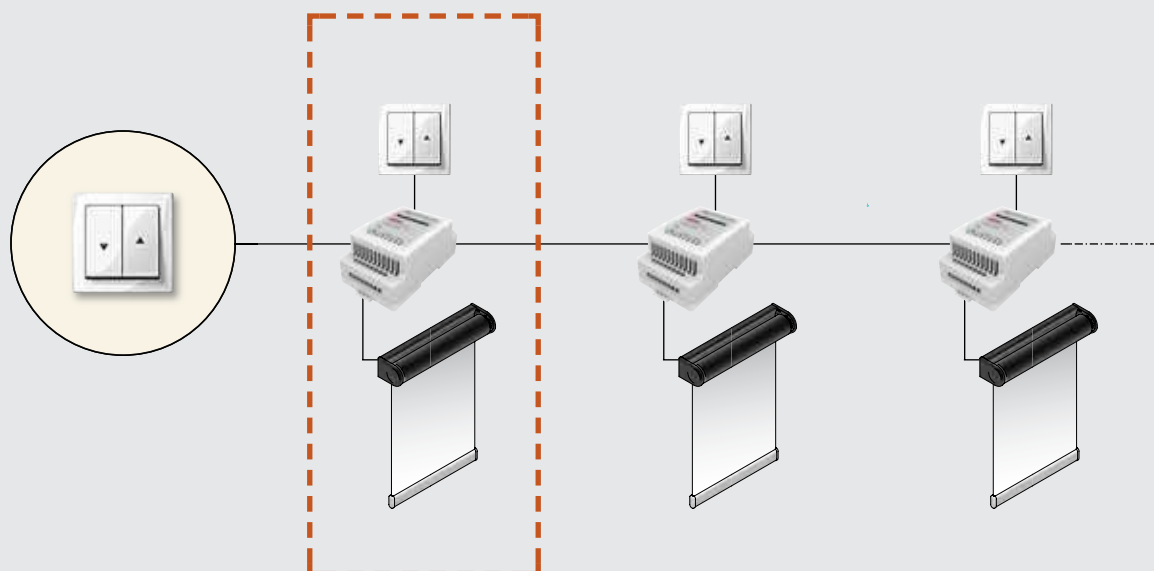


Diagram 1: Example of a Basic Control System

- 3 Roller Blinds connected by MA100 Motor Controllers, operable by individual switches.
- 1 central switch transmitting commands through the parallel connected motor controllers.

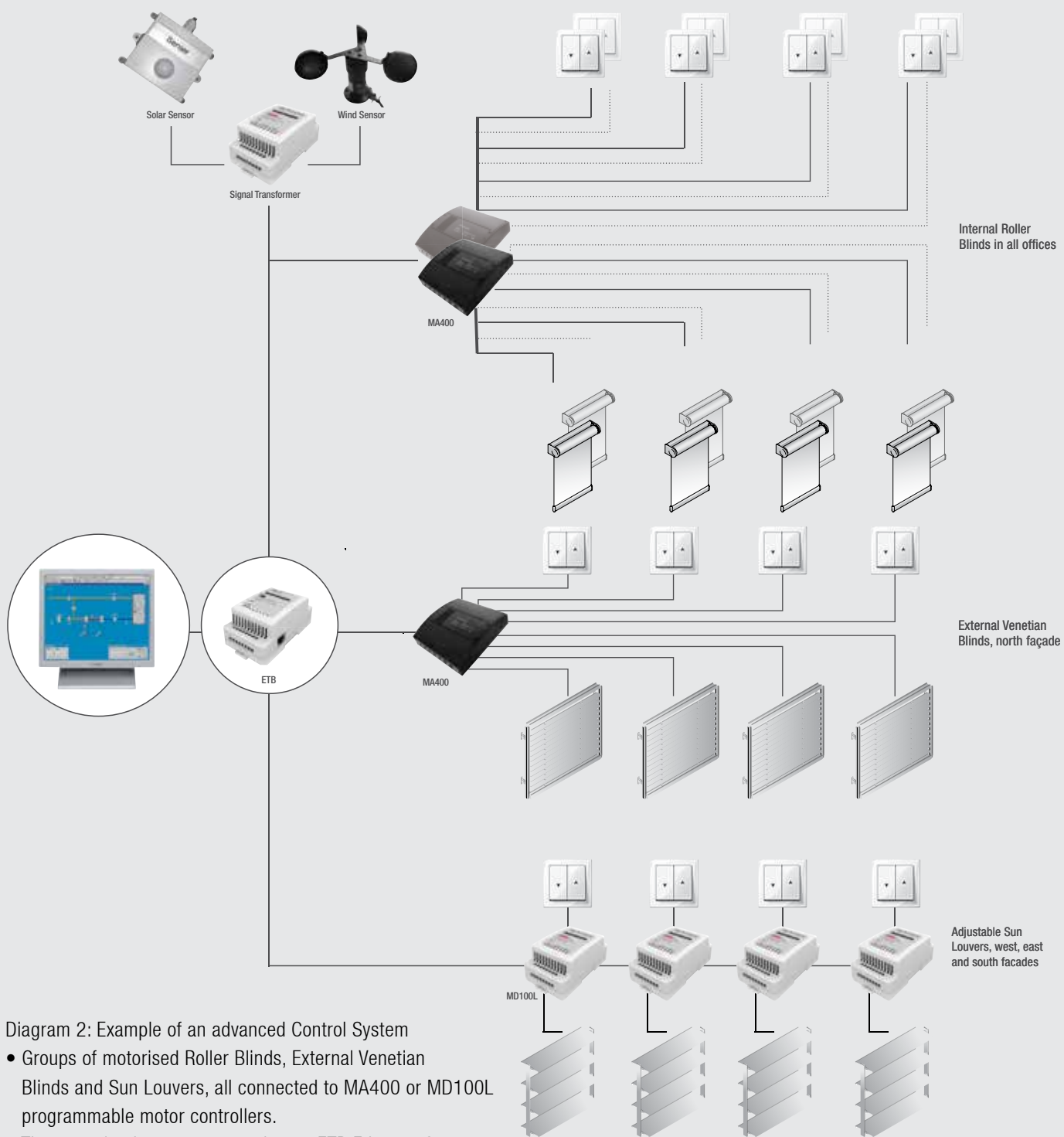


Diagram 2: Example of an advanced Control System

- Groups of motorised Roller Blinds, External Venetian Blinds and Sun Louvers, all connected to MA400 or MD100L programmable motor controllers.
- The control units are connected to an ETB Ethernet Gateway.
- The ETB is connected to a dedicated server.
- A weather station consisting of a sun and wind sensor + signal bus master is connected to the ETB and passes on signals to the server.

# EOS™ ISC Components

## MA400 MOTOR CONTROLLER

Product features:

- Fitted with a high-speed 32-bit special motor control chip, running precision timing control up to 0.01 seconds, equivalent to one-tenth of a conventional controller.
- Built-in advanced precision tilting features (for aluminum venetian blinds, wood blinds, Silhouette® etc.)
- Multiple built-in intermediate positioning, preset scene memory function and built-in cluster memory enabling the controller to be assigned to multiple logical groupings, so that regrouping can be done without changing hardware and cabling. Grouping and scene control may be operated by a remote control, user-friendly one-button control system or third-party smart control system to bring about a simple connected scene mode integration.
- Programmable switching function applicable to all types of solar protection products (louvers, external venetian blinds, roller shades, curtains etc.). Supports local single control or flexible grouping as well as scene control.
- A built-in serial communication interface, using an open two-way communication protocol, provides, real-time motor feedback for advanced smart system integration.



**MA400**  
Programmable AC motor controller  
for maximum 4 motors

## OTHER MOTOR CONTROLLERS

MA100 / MD100 / MD100L

Product features:

- Individual, programmable controllers for low voltage motors (MD100 / MD100L) or high voltage motors (MA100).
- EOS™ bus interface can be connected to a touch screen terminal which allows remote control and monitoring.
- A third-party smart control interface can be used for direct connection with touch screen or conference system.
- Can store up to 10-Group locations, 10 intermediate positions and 10 scenes.
- Equipped with timing and precision tilting functions to accommodate programming of advanced sun tracking scenarios.



**MA100**  
Single AC motor controller



**MD100L**  
Single DC motor controller for Sun Louvers



## ETHERNET GATEWAY

Product features:

- Supporting bus network that can control the same or different types of controllers, such as motors, lighting and electrical equipment.
- It supports different types of input devices and control methods, such as switch control, remote control, sensors automatic control, mobile phone and tablet control, touch screen control, electronic timers etc.

Network Bus Master:

- Provides Ethernet interface for control via LAN or wireless wifi, using a variety of mobile phones, touch screens, tablets, PCs to be locally or remotely controlled.
- Multiple Hunter Douglas Motor Controllers can be connected through the Ethernet to a central computer in order to create a large-scale integrated control system.

Web-based Bus Master:

- Contains all basic functions
- Supports multi-user login page by a single control interface through manual control, touch screen scene control and grouping control.



ETB  
Ethernet Bus Master

V2 Sensor Master

Product features:

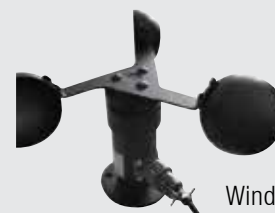
- Can be connected with a wind and light sensitive sun sensor to create a full weather station. The V2 can pass on signals from the sensors to up to a 100 motors, or group controllers.
- Inbuilt is an optimised three-level algorithm, that helps to avoid over-frequent operations, for instance when small clouds pass before the sun over short intervals of time.



V2 Sensor Master



Sun Sensor



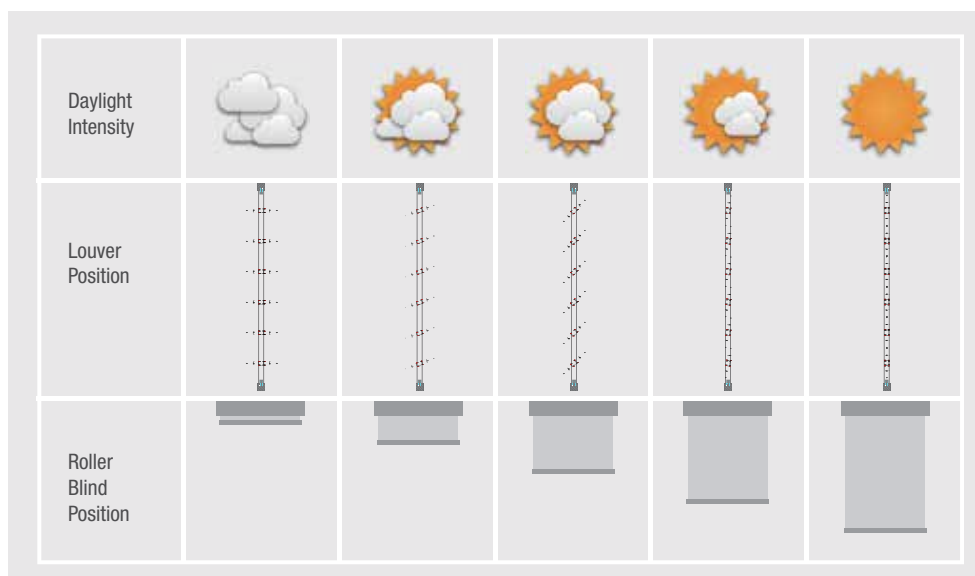
Wind Sensor

# Sun Tracking and Energy Efficiency

There are different ways nowadays of measuring energy efficiency and sustainability of newly designed buildings. A popular one is LEED (Leadership in Energy and Environmental Design) v4 from the US based Green Building Council. Building projects can gain points by satisfying a range of prerequisites to a higher or lower degree and achieve different levels of certification. A high LEED-rating can help to increase the attractiveness of a project in the eyes of developers and potential users, as more and more institutions and companies aim to make a personal statement of environmental responsibility.

An EOS™ controlled solar protection system can help to optimise solar heat gain and daylight entrance, thus reduce energy consumption for artificial lighting, heating and airconditioning

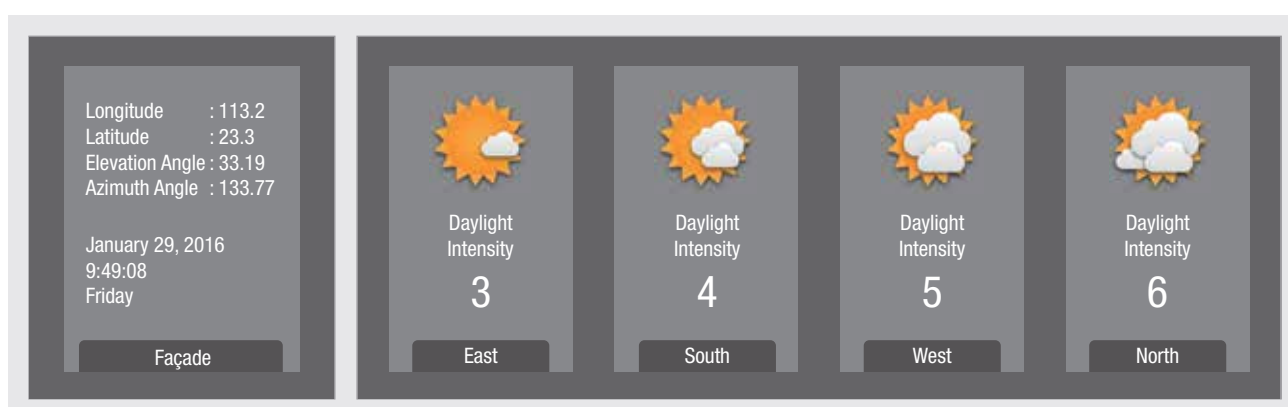
and increase LEED-rating. Louvers and Venetian blinds can be tilted open, to let in the sunlight in the late afternoon, so as to postpone the need for lighting. Roller Blinds can go down, when the inner temperature reaches a certain comfort level, so that heat gain is slowed down or stopped. Depending on the intensity of the sunlight, louvers may be tilted in a slightly sharper angle, instead of being fully closed, so that only excessive light is blocked. By putting sun sensors on different floors of a building, opening and closure of louvers or blinds can be differentiated, according to the light intensity per level. At certain wind speed external solar protection can be positioned automatically to avoid damage etc. Maintenance of the control system can be done remotely, so reducing the cost for eventual changes in the program.



Suitable for rectangular or irregularly shaped façades



Shadow calculations can take into account the proximity of other buildings



Solar sensors can be installed on every façade and controlled individually

# Reference Projects

## HIGH-RISE COMMERCIAL BUILDINGS

- Remote control can operate each motorised blind independently; each room needs to be equipped with a wall-mounted switch to control all the blinds within the room.
- The control radius of the remote control and wall switch can be changed without re-wiring works and adjusted to suit the requirements of the room.
- Centralised control can be implemented on all sun shade products in the whole building. However, this system requires a solar control function in order to achieve energy-efficiency.
- Centralised control interface is user-friendly and convenient to use. It has multiple features which include individually operating each shade, real-time control monitoring, regional control, schedule control, fire control linkage and staggered peak start up so as to achieve comprehensive management over all the sun shades in the building.



## HUNTER DOUGLAS WINDOW TREATMENTS

Motorised 50mm Venetian Blinds x 2500

### CONTROLS

MA400-RF x 750

MK100 x 20

TR4 x 770

Wall Switches x 770

ETB x 85

24 Port Switch x 4

iServer x 1

V2 Sensor Bus Master x 1

# Low-Rise Office Building



## **OFFICE BUILDING OF THE XI'AN GUANGHUI AUTOMOTIVE LOGISTICS INDUSTRY PARK**

Situated in the Xi'an International Port Area, Guanghui Automotive Logistics Industry Park, is composed of a Car Expo Center, 4S Stores with more than 50 brands, several auto-related markets, an Auto College, Automotive Technology Museum and several other supporting facilities. The central office building of Guanghui Park boasts a "floating" design concept, making the entire building rich in content.

The two decorative bands in the middle create a building appearance that blends void and solid, expressing a sense of robust aesthetics. Natural light enters the inside through the perforated bands, resulting in a comfortable lighting condition. An EOS™ Intelligent Sun Control System helps to attain proper shading and lighting all the year round.

**EXTERIOR SUN CONTROL SYSTEMS**  
Hunter Douglas Aeroscreen,  
with adjustable 600mm perforated fins

**CONTROLS**  
150 MD100L Motor Controllers for Louvers  
150 Satellite Eye Receivers  
50 Multi channel remote controls  
150 Wall mounted switch controls

# Fully Glazed Entrance Lobby

## GLASS ATRIUM

- Utilizing 4-channel remote to control four groups of motorised screen roller blinds
- The roller blinds can be programmed with multiple intermediate stop positions and within a tolerance of 5mm, to ensure optimal alignment between the bottom rails
- Scene programming by means of a touch screen, operable by wall switch



## HUNTER DOUGLAS WINDOW TREATMENTS

Motorised Screen Roller Blinds with cable guiding x 32

## CONTROLS

MA400-RF x 8

Four-channel remote control x 1

Wall-mounted switch x 1

# Corporate Office Boardroom



## **UTUSAN MELAYU, MALAYSIA**

Utusan Melayu is a multimedia publishing company based in Malaysia. 352m<sup>2</sup> of motorised AS300 panels were installed on the inside behind glass façades to reduce the direct sun light glare through the use of 2 x sun sensors for advanced sun tracking. The suspension system had to be customized to fit the 2 x pointed gable roof designs. The project won the PAM Silver award in the Commercial Low Rise category.

**INTERIOR SUN CONTROL SYSTEMS**  
Perforated Aeroscreen, with adjustable  
300mm fins

### **CONTROLS**

55 x MD100L Motor Controllers for Louvers  
55 x Wall-mounted Control Switch

2 x Sun Sensor  
2 x V2 Sensor Master

# Conference and Meeting Room

- Equipped with a touch control terminal that can individually control each blind in the conference hall.
- A wall-mounted switch is used to control up to four preset scenes: general meeting, important meeting, use of overhead projector and end of meeting. Each preset scene can be initiated by a single touch.
- An-Ethernet-Gateway ensures the integration of the motorised Roller Blinds in a higher level automations. system, managing daylight entry, artificial lighting, projector screen and LCD TV.

## **ELECTRICAL PRODUCTS**

Motorised Blackout Roller Blinds x 8  
Motorised Screen Roller Blinds x 8  
Ceiling lights x 12  
Projection screen x 1  
Projector x 1  
LCD TV x 1

## **CONTROLS**

MA400 x 4  
LA400 x 3  
GC-M3 x 2  
DR300 x 1  
ETB x 1  
Touch control terminal x1



Window Coverings  
Ceilings  
Sun Control  
Façades



- China
- Cambodia
- Hong Kong
- India
- Indonesia
- Japan
- Korea
- Malaysia
- Philippines
- Singapore
- Taiwan
- Thailand
- Vietnam
  
- Australia
- Europe
- Latin America
- North America



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