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Introduction: ElectroShade Electronic Control Systems



IBM A/FE Headquarters – Pleasantville, NY
Edward L. Barnes Associates, PC

This 1972-1973 project incorporated MechoShade Systems, inc. automated Solar Shades with Analog Solar Control systems. It was the precursor to the AAC SolarTrac™.

Open Sourced Solutions – Standard Tubular Motors

MechoShade features control solutions with open source, line voltage tubular motors. MechoShade control systems possess over 30 years of experience in successfully employing these standard line voltage motors.

By developing intelligent and adaptive control algorithms the company has overcome the alignment and positioning limitations associated with these asynchronous standard motors, thus eliminating the need for expensive, proprietary and single-sourced encoded motors within our products. In addition, standard line voltage motors offer the broadest range of torque and speed variations which enables MechoShade to provide the most extensive line of motorized shading solutions in the industry.

for safety and reliability. The motors used in MechoShade solutions possess agency approvals covering the entire motor “tip-to-tip” including: motor construction and performance (UL1004), thermal overload protection (UL2111) and operator design with respect to window and drapery applications (UL325). No other motors in the industry offer this level of safety and reliability assurance.

MechoShade also goes one step further than its competition to ensure that not only do the motors meet these requirements, but so do the controls, support components and the resulting SYSTEM including the recommended wiring and operating methods. Therefore, on every MechoShade control system, can be found the ETL Mark identifying system-tested conformance to the highest industry standards.

into a variety of third party Lighting, HVAC, A/V and Building Management Systems. MechoShade has a growing list of industry partnerships with third party companies offering solutions which not only work with MechoShade products and systems, but also have been certified by MechoShade for their capability to reliably access and employ the features available from these products. In addition, these companies have agreed to partner with MechoShade from a training and field support standpoint to provide an industry-wide technical support team dedicated to making sure the customer is never left without responsive and knowledgeable support in the field.



Reliability and Safety – System Testing

MechoShade products only employ UL Recognized and CSA Approved motors that meet the strictest industry standards

Seamless Integration and Automation

MechoShade has designed its controls to integrate with a variety of automation sensors in order to enhance comfort, convenience and energy efficiency that supports daylighting, energy conservation and Green building design. Furthermore, the controls offer seamless integration

Tech Support

No other shading or controls company provides a greater range of product capability, experience or dedication toward meeting the needs of its customers. As such, MechoShade's Sales Representatives and Technical Support Staff are always available to serve a consulting role to the A&D community in order to help solve or enhance current and future project opportunities.

Continued 

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4.02
MS2200 - 01/01/08



Overview: ElectroShade Electronic Control Solutions

MechoShade motorized window and skylight shading solutions are designed for both commercial and residential window management projects. These system solutions optimize the application of standard, line voltage (120/240 VAC, 50/60 Hz) tubular motors with ElectroShade® hardware and fabric. MechoShade Systems, Inc. is a vertically integrated company that carries the broadest range of shading hardware and control electronics options in the industry. This enables the company to offer a wide selection of customizable componentry to best meet the features and budget associated with any automated shading project. In addition, the controls are designed to offer seamless integration into most third party Lighting, HVAC, A/V and Building Management Systems thus providing the ultimate in terms of occupant comfort and intelligent building performance.

MechoShade's standard electronic switching and control product line offers solutions which range from single office to whole building while accommodating various levels of motor grouping and shade alignment requirements. Each solution employs a specific wiring/interconnect methodology which tends to optimize it for either retrofit, renovation or new construction applications. The wiring methodology offers distinct advantages and disadvantages in terms of product and installation economy, ease of troubleshooting, security, integration, product functionality and flexibility. MechoShade offers four (4) basic product categories defined by their interconnection methodology:

Controls Selection Guide						
FEATURES:		Line Voltage Hardwired	Low Voltage Hardwired		Low Voltage Networked	Wireless
		AC Switch	MLC	IQ/MLC™	I•Con	RTS
Scale	Room/Multi-Room	•	•	•	•	•
	Floor/Multi-Floor		•	•	•	
	Whole Building				•	
Flexibility	Hardwired	•	•	•		
	DIP Switch Address			•	•	
	Fully Software Addressable				•	•
Grouping	(M/I/G/OG)*	M	M	M/I/G/OG	M/I/G/OG	M/I/G/OG
	Number of Motors/Controller	N/A	4	4	2	
	Number of Addresses	N/A	N/A	5	9	6
	Number of Control Groups per Motor	1	1	5	255+	12
	Max Number of Motors Controlled by One Switch	2	100	40	100+††	100+††
Alignment	Alignment Positions**	2	2	5	6	3
	UniformMode™†			•	•	
Integration	Dry Contact		•	•	•	•
	RS232/485		•	•	•	•
Accessories	Timer – 7-Day		•	•	•	•
	Photo Sensor Ctrl. (SAC Unit)		•	•	•	•
	IR Controller		•	•	•	•
	RF Controller		•	•	•	•
Safety	UL/CSA/ETL Systems Testing	•	•	•	•	•

* M = Master; I = Individual; G = Group; OG = Overlapping Group
 † Shades will only stop Full-Up, Full-Down and Preset Positions.

** Includes both Full-Up and Full-Down.
 †† Contact MechoShade Systems for Specifics.

Furthermore, MechoShade also offers a PC-based Solar Tracking System that is capable of integrating any of MechoShade's Low Voltage Controls into a whole building control system customized to a building's specific geodesic location and focused on employing proactive and reactive routines to optimize energy efficiency, comfort and view throughout the building.

Continued 

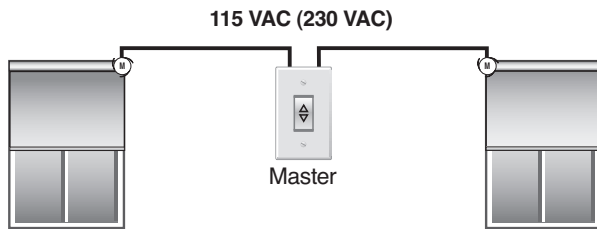
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Overview: ElectroShade Electronic Control Solutions



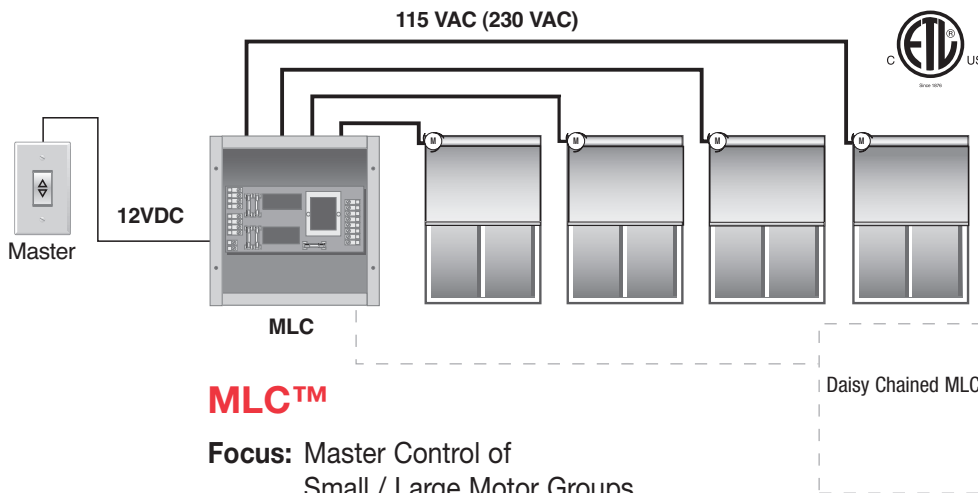
LINE VOLTAGE SWITCHING

Focus: Local control of one or two motors

- Full Up / Full Down Control
- Momentary or Maintained Control*
- 2-Motor Control Groups Maximum
- Variety of Switch Styles

LINE VOLTAGE SWITCHES – HARDWIRED

See pages 4.09 to 4.11 for more details.



MLC™

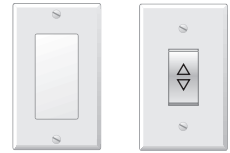
Focus: Master Control of Small / Large Motor Groups

- Daisy Chain 4-Motor Controllers – Master Control - Up to 100 Motors
- Full UP / Full DOWN Control w/ Momentary or Maintained Control*
- Variety of Automation Sensor Interfaces
- Dry Contact Integration Into 3rd Party Control Systems – See Page 4.57 For Details
- Integrates With AAC

Accessory Controls: (Please see pages 4.33-4.34 and 4.45 for details.)

- Infrared and Radio Frequency Remote Controllers
- Solar Activated Controller (SAC)
- Timers

SWITCHES



DECORATOR PADDLE SWITCHES (DPDT)

MAINTAINED
ESWX 0728 ST WH
ESWX 0729 ST CW

MOMENTARY
ESWX 0735 ST WH
ESWX 0734 ST CW

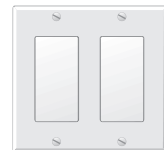
(SWITCHPLATE SOLD SEPARATELY)

ROCKER SWITCHES WITH PRINCESS PLATE

MAINTAINED
ESWX 0688 PS WH
ESWX 1441 PS CW

MOMENTARY
ESWX 0689 PS WH
ESWX 1551 PS CW

(SWITCHPLATE INCLUDED)



2 GANG: DECORATOR & PADDLE SWITCHES
ESWP 0128 ST WH



INDOOR KEY SWITCH
MAINTAINED
ESWX RYMA PS CW

MOMENTARY
ESWX RYMO PS CW

(SWITCHPLATE SOLD SEPARATELY)

DIGITAL KEY PAD
ESDX 0739 IN WH

(SWITCHPLATE INCLUDED)

* Momentary Control Switches return to the "Neutral" or "OFF" position when the toggle is released. Maintained Control Switches remain in the position that has been set continuing to power the motor until the shade's upper or lower limit has been reached.

LOW VOLTAGE CONTROL – HARDWIRED

See pages 4.14 to 4.19 for more details.

Continued

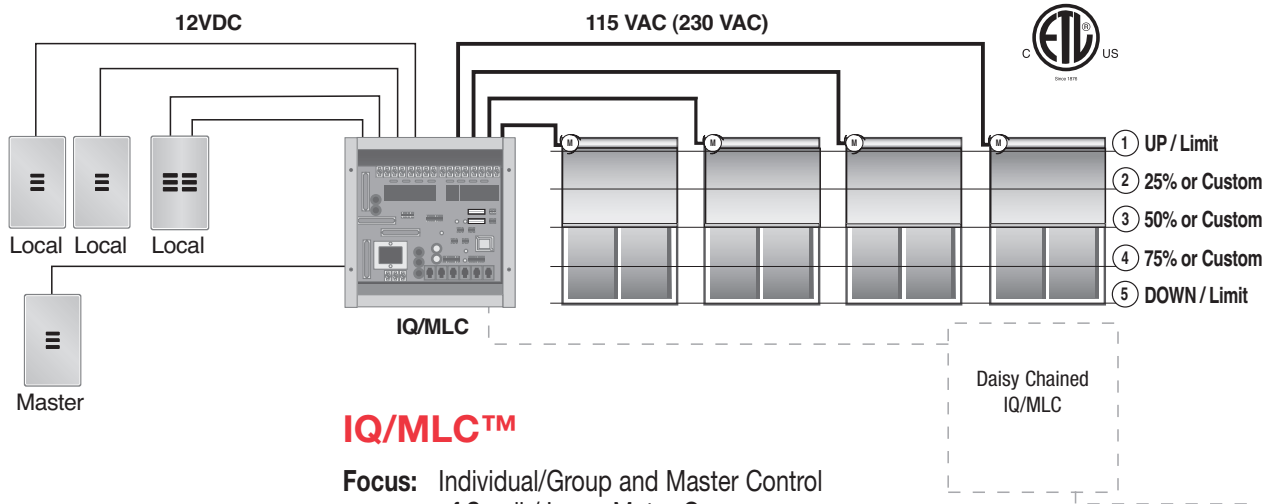
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Overview: ElectroShade Electronic Control Solutions



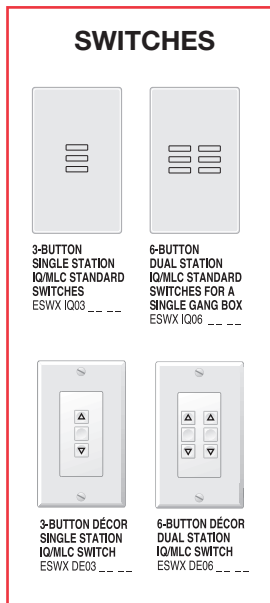
IQ/MLC™

Focus: Individual/Group and Master Control of Small / Large Motor Groups

- Daisy Chain 4-Motor Controllers – Up to 40 Motors per Master Switch
- Multi-Level Control
 - Individual, Group and Master
 - Master Switching
 - 4 Local / Group Switching
- 5 Alignment Positions
 - 3 Programmable Mid-Window Alignment Positions Plus Full Up and Full Down
- Normal / Uniform Operating Modes
- Reconfigure Motor Grouping Without Rewiring
- Variety of Automation Sensor Interfaces
- Dry Contact Integration into 3rd Party Control Systems – See Page 4.57 For Details
- RS232 / 485 Integration into 3rd Party Control Systems – See Page 4.57 For Details
- Integrates with AAC SolarTrac™

Accessory Controls: (Please see pages 4.33-4.34 and 4.45 for details.)

- Infrared and Radio Frequency Remote Controllers
- Solar Activated Controller (SAC)
- Timers



LOW VOLTAGE CONTROL – HARDWIRED
See pages 4.21 to 4.32 for more details.

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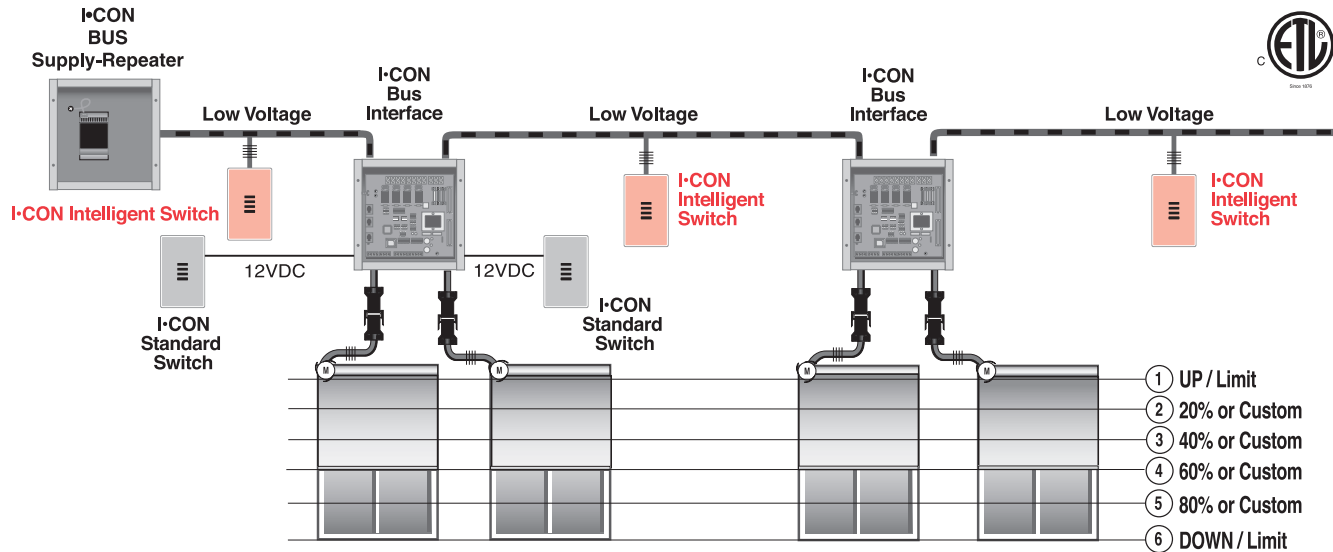
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Overview: MechoShade Electronic Control Solutions



I-CON™ – 2-Way Communication Bus Line System Low Voltage Control System

Focus: For projects that are either large scale motorization or automation with potential requirements for flexibility or reconstruction, robust addressable network, flexible wiring, free topology,

SWITCHES

 4-BUTTON SINGLE STATION I-CON SWITCHES WIDE ZONE INTELLIGENT SWITCHES ESWX WZ04	 8-BUTTON DUAL STATION I-CON SWITCHES FOR A SINGLE GANG BOX WIDE ZONE INTELLIGENT SWITCHES ESWX WZ08
 4-BUTTON SINGLE STATION I-CON SWITCHES LOCAL ZONE STANDARD SWITCHES ESWX LZ04	 8-BUTTON DUAL STATION I-CON SWITCHES FOR A SINGLE GANG BOX LOCAL ZONE STANDARD SWITCHES ESWX LZ08

- Networked, Addressable 2-Motor Controllers
 - Manual Addressing thru DIP Switches
 - Employ Software Addressing Using the Handheld Programmer
- Free Topology Low Voltage Twisted Pair Control Wiring
 - Cost Effective and Flexible Wiring Layout Helps Reduce Installation Costs
- Multi-Level, Overlapping Control
 - Individual, Group and Master Control
 - Each Motor can Belong to 9 Different Control Groups
- 6 Alignment Positions
 - 4 Programmable Mid-Window Alignment Positions
- Normal / Uniform Operating Modes
- Reconfigure Motor Grouping Without Rewiring or “Climbing a Ladder”
 - Networked Control for Building-Wide and Complex Control Grouping
 - Hardwired Control Option for Cost Effective Local Control Grouping
 - Variety of Automation Sensor Interfaces
 - Dry Contact Integration into 3rd Party Control Systems – See Page 4.57 For Details
 - LonWorks Integration into 3rd Party Control Systems – See Page 4.57 For Details
 - Integrates with AAC SolarTrac™

Accessory Controls: *(Please see pages 4.33-4.34 and 4.45 for details.)*

- Infrared and Radio Frequency Remote Controllers
- Solar Activated Controller (SAC)
- Timers

LOW VOLTAGE CONTROL – BUSLINE See pages 4.35 to 4.39 for more details.

Continued

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4.06
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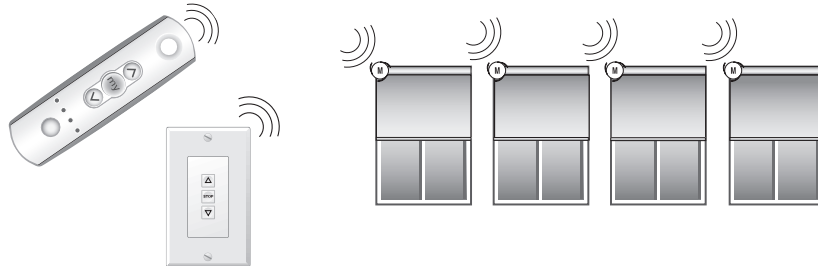
Overview: ElectroShade Electronic Control Solutions



Wireless Controls – Radio Remote Wireless Network

RTS™

Wireless/RTS™ Motors



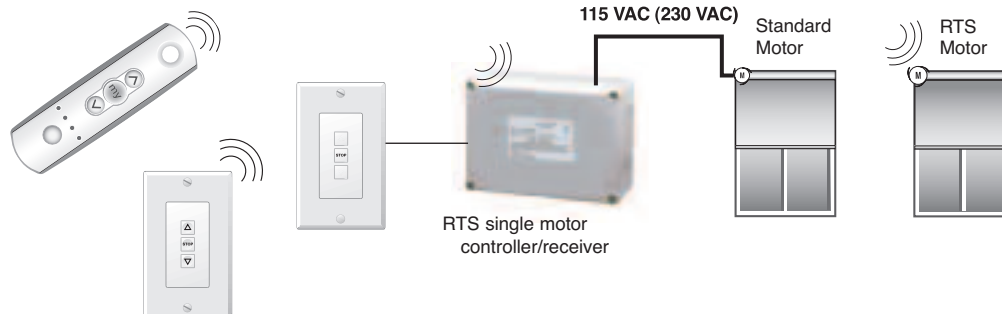
WIRELESS MOTORS AND CONTROLLERS

Focus: Individual/Group & Master Control of Small/Medium Motor Groups,
Difficult to Wire Installations

- Eliminates Control Wiring
- 3 Alignment Positions
 - 1 Programmable Mid-Window Alignment Position
- Perform Motor Grouping Without Rewiring or “Climbing a Ladder”
 - Employs Wireless Software Addressing
- Variety of Automation Sensor Interfaces – Sun Activated Timers (SAC), Wind Activated Timers (WAC)
- Dry Contact Integration into 3rd Party Control Systems – See Page 4.57 For Details
- Distributed Control Intelligence within the Motor
- Eliminates Wiring to an Intermediate Controller
- Allows Daisy-Chain Wiring of Power to Motors

RTS™

Standard Motors



Focus: Allows integration of standard motors with RTS controllers.

WIRELESS CONTROL – NETWORKED See pages 4.41 to 4.45 for more details.

Continued

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4.07
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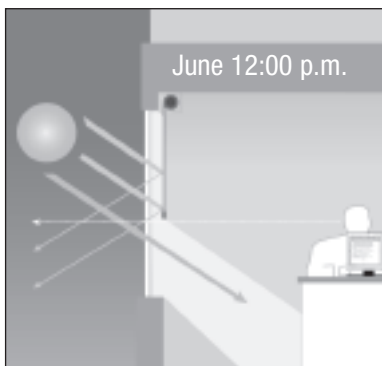
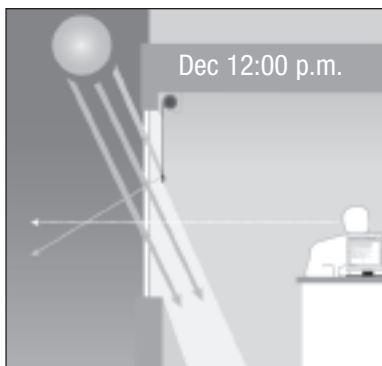
Overview: ElectroShade Electronic Control Systems

WindowManagement™ with AAC SolarTrac™

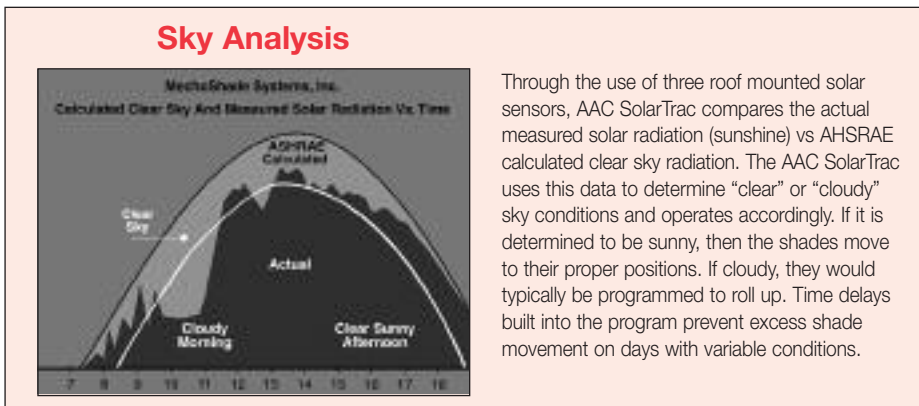
MechoShade's AAC SolarTrac™ System, is a software based control system, designed to automatically adjust the position of the shades incrementally on the window to maximize view and daylight while protecting people and work surfaces from direct sun and excessive brightness and glare. AAC SolarTrac can react to local climactic variables such as sunny or cloudy conditions.



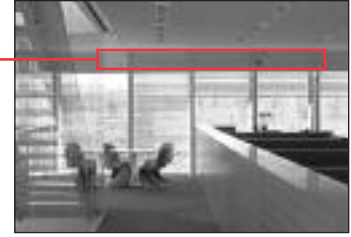
The AAC SolarTrac adjusts shades incrementally on the window in accordance with the solar profile angle and BTU load relative to each zone or orientation.



The position of the shades is determined for each zone based on the window geometry, orientation, glazing optical properties, allowable solar penetration, and real-time sky conditions, ie sunny or cloudy. The goal is to provide shading on the window when and where needed, while leaving as much of the window unshaded in order to maximize view and control glare. In other words....total WindowManagement.



2:15



2:40



3:45



At **2:15 p.m.** the AAC SolarTrac has lowered the shades in reaction to the sun's shift to the west elevation. The light dimming system senses enough daylight for the overhead lights to remain off.

At **2:40 p.m.** the sun moves further onto the West elevation, becoming more direct. The AAC SolarTrac lowers the shades to the next position, to control the solar penetration into the work area. The light dimming system continues to keep the lights off due to adequate natural light in the space.

At **3:45 p.m.** the AAC SolarTrac reacts to the solar gain and glare conditions created as the sun sets, by lowering the shades to the maximum down position. The light dimming system has activated some of the lights, while leaving others off, based on the light levels achieved in each area.

For more information on AAC SolarTrac see pages 4.46 – 4.48, 4.50 and 4.55.

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4.08
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