



Sun Tracking Automated Daylighting System AWC-25 Automatic Controller Operation Manual

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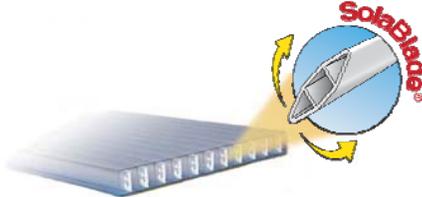
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1 Introduction

The Sun Tracking Automated Daylighting System consists of glazing panels with built-in banks of cylindrical light shading elements (called SolaBlades®) that can be rotated between the fully open to the fully closed position.



The Sun Tracking Automated Daylighting System is controlled by the AWC-25 Automatic Controller. The AWC-25 is connected by a CAT5 cable to the Daylighting glazing system.

The SolaBlade® design is such as to require only small rotational steps to control a wide range of light and shading levels. They can be preset to deliver direct or diffused sun rays.

The system can have two or more glazing panels connected in tandem (referred to as Branches) that act as a single unit; or two or more glazing panels (or branches) that act independently of each other – these are called Zones. The AWC-25 can control up to four Zones.

AWC-25 Automatic Controller

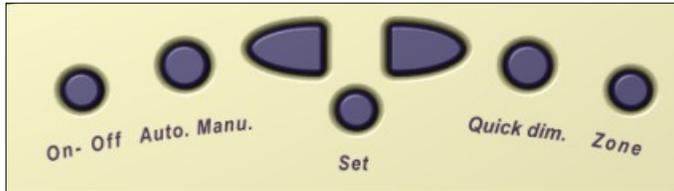
The AWC consists of an LCD screen and a keypad of control buttons. It can be set to operate in either a *Manual* or *Automatic* mode.

In the Automatic mode the user defines desired room lighting (level). Once set in the Automatic mode, the Sun Tracking Automated Daylighting System logic keeps the settings based on the Sun and Room Sensors.

In the Manual mode the user directly sets the SolaBlade® angles and daylight level.

AWC-25 Controls

The following are the functional definitions for the AWC-25 keypad buttons:



On-Off – Turns the system on or off.

Auto. Manu. – Toggles the system between the Automatic and the Manual modes.

Left Rotation – Rotates the SolaBlade® angle setting in a clockwise direction.

Right Rotation – Rotates the SolaBlade® angle setting in a counter-clockwise direction.

Quick dim. – For quick room darkening - toggles between temporarily shutting the SolaBlade® and opening them. (The SolaBlades® will recover to the angle at which they were when the button was initially pressed.)

Zone – For multi-Zone systems selects the Zone which the Wall Controller displays and to which the settings are to be applied. Pressing this button cycles between the Zones.

Set – This button has a number of functions. Rapidly pressing and releasing the button enables scrolling between the E-Light, Room Occupancy, and Direct/Defuse Lighting functions. Pressing and holding the button for over 10 seconds sets other functions. In both cases, the exact function of the button depends on whether the AWC-25 is in the Automatic or Manual mode.

AWC-25 LCD Display

The following are the most common symbols that appear on the AWC-25 LCD display and their meanings:



The Day Light bar.

The word **AUTO** appears above it when the system is in the Automatic mode. In this mode it indicates the user setting for the desired room light level on a scale of 10-100.

In the Manual mode it shows the actual current Zone room light level as measured by Room Sensor.



Digital display of the SolaBlades[®] actual angle. In the Manual mode, the word **MANUAL** appears below it.



Indicates the SolaBlades[®] actual angle.



Indicates the Zone (A, B, C or D) to which the settings apply.



Appears twice: above the SolaBlade[®] angle symbol it indicates that the Sun Sensor is operational; below the SolaBlade[®] angle symbol it indicates that the Room Sensor is operational.

The Room Sensor is associated with a Zone, the symbol will appear only if appropriate Zone has been selected.



Indicates that the current Zone is set to Dim mode, i.e., the **Quick dim.** button has been pressed and the SolaBlades[®] are closed.



Indicates that an **E-Light** is operational.

An E-Light (Electric Light) device can be connected to the system either directly through a contact relay, or by way of a dimmer switch.



Indicates that an **Occupancy Sensor Input** is active and controlling the lighting.

The Occupancy Sensor Input is an input for an external Person-in-Room Occupancy device (commercially available – not part of the system).



Indicates that the AWC controls are locked.



Indicates that the SolaBlades[®] are angled such that direct sunlight is entering.



Indicates that the SolaBlades[®] are angled such that diffused sunlight is entering.



Indicates that the system is in the Self Test mode. The symbol will automatically disappear on completion of the self test cycle.

2 Daylighting Settings

Turning the System On

To turn the system on:

1. Press the **On-Off** button. Note that the Test symbol () is displayed on the LCD indicating that the system is performing self tests.
2. Wait until the Test symbol vanishes from the LCD indicating that the self tests are completed. Upon power on, the AWC-25 starts in the Manual mode, you have two options:

Manually set the angle (by pressing the **Right Rotation** or **Left Rotation** buttons) until the desired daylighting level is achieved, and either stay in the Manual mode or switch to the Automatic mode by pressing the **Auto. Manu.** button in which case, the system will automatically maintain this daylighting level.

Press the **Auto. Manu.** button to set the AWC-25 to the Automatic mode, and adjust the relative room light intensity to the desired level.

Inserting Automatic Settings

In the Automatic Mode the Sun Tracking Automated Daylighting System daylighting settings are automatically stored in the system once set. The system will track the sunlight and open and close the SolaBlades® to maintain the desired daylighting. If there are Zones, up to four different settings can be applied.



The Automatic Mode is available only if the Room sensor is connected. The availability of the Room sensor is indicated by the display of the Room Sensor symbol () on the LCD.

If the Room sensor is disconnected, this icon, as well as the Daylighting bar, is not displayed.

To insert automatic settings:

1. If there are Zones, select the Zone by pressing the **Zone** button. Note that the Zone symbol appears on the LCD:



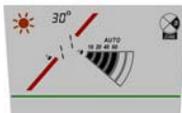
One AWC-25 can control up to four Zones, labeled A, B, C and D. Pressing the **Zone** button toggles through the Zones. The Zone label appearing is the Zone to which the settings will be applied.



If there is only one Zone in the system, this step can be skipped.

2. Press the **Left** or **Right Rotation** button until the daylighting in the area is as desired.

Check the Daylighting bar displayed on the LCD. The solid bars indicate the amount of desired daylighting being set



3. Repeat Steps 1 and 2 for the other Zones, as needed.

Adjusting Automatic Settings

Even if the Sun Tracking Automated Daylighting System is in the Automatic Mode, the daylighting settings can be adjusted.

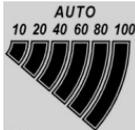
To adjust the automatic settings:

1. If there are Zones, select the Zone by pressing the **Zone** button. Note that the Zone symbol appears on the LCD:



Press the **Zone** button until the desired Zone label appears.

2. Press the **Right** or **Left Rotation** button to adjust the daylighting. Check the Day Light Bar display:



The solid bars indicate the amount of desired daylighting being set (10 is least, and 100 is maximum). The highest segment being set will blink, and if no button is pressed, the SolaBlades® will be rotated and the segment stop blinking.

Manually Setting Daylighting

Unlike the Automatic Mode, SolaBlades® set manually stay at the angle to which they have been set. If there are Zones, different settings can be applied to each Zone individually.

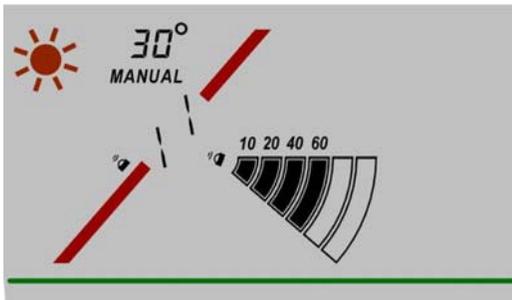
To manually set the Daylighting

1. If there are Zones, select the Zone by pressing the **Zone** button. Note that the Zone symbol appears on the LCD:



One AWC-25 can control up to four Zones, labeled A, B, C and D. Pressing the **Zone** button toggles through the Zones. The Zone label appearing is the Zone to which the settings will be applied.

2. Press the **Auto. Manu.** button so that the Manual Mode is displayed on the LCD:



3. Press the **Left** or **Right Rotation** button until the daylighting in the area is as desired.

Quick Dim

The Quick Dim option is used to temporarily shut the SolaBlades® for an area (for example if a presentation is being given and the room needs to be dark).



The Quick Dim option can be used whether the Sun Tracking Automated Daylighting System is in the Automatic or Manual Mode.

To activate the Quick Dim:

1. Press the **Quick dim.** button.
2. Note that the room darkens (the SolaBlades® are rotated to the 0° position in a fast mode) and the Quick Dim symbol is displayed on the LCD:



To deactivate the Quick Dim:

1. Press any button (except for the **On-Off** button).
2. Note that the room daylighting returns (the SolaBlades® are rotated to their preset position in a fast mode) to what it was before the SolaBlades® were closed.

3 Other Daylighting Options

Diffused Sunlight vs. Direct Sunlight

You have two lighting modes available: Direct Sunlight and Diffused Sunlight.

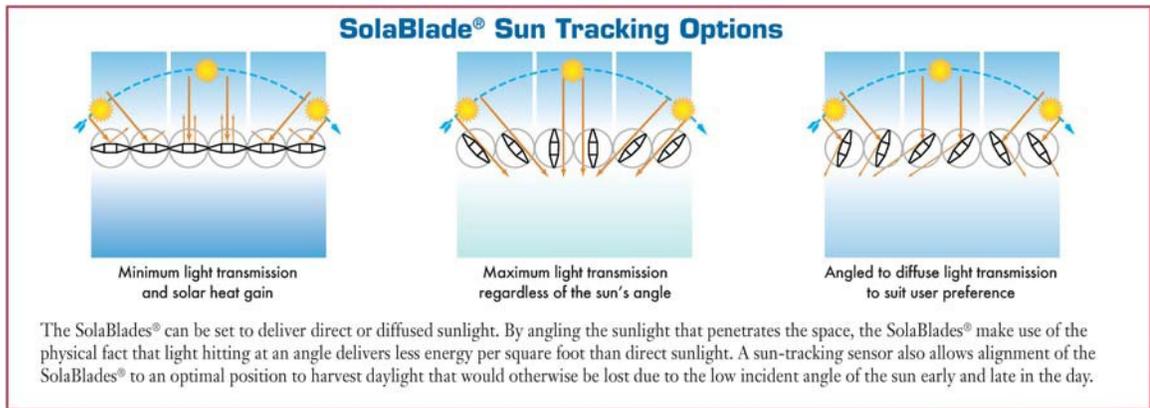
Direct Sunlight Mode

In the Direct Sunlight mode the SolaBlades[®] are, for the most part, set in parallel with sun rays. That is, the sun rays enter straight through the SolaBlades[®], thus providing maximum heating energy in addition to light.

Diffused Sunlight Mode

In the Diffused Sunlight mode the SolaBlades[®] are, for the most part, set to be roughly perpendicular to the sun rays, such that the sun rays are reflected from the back side of the SolaBlades[®]. Diffused lighting makes use of the physical fact that light hitting at an angle delivers less energy per square foot than light hitting directly. This means that the area being lighted receives less heat, and is, therefore, cooler. In addition Diffused Sunlight will further reduce possible glare associated with direct sunlight through glass.

The differences in SolaBlade[®] angles for the two modes are illustrated in the diagram below:



Direct sun light may be advantageous for a winter conditions. Diffused sun light may be advantageous for summer conditions.

To set the SolaBlades® for diffused sunlight:

This procedure assumes that the system has been set for the Direct Sunlight mode.

1. Make sure that the system is in the Automatic Mode (if it is not, press the **Auto.Manu** button to put it in the Automatic Mode).
2. Repeatedly press the **Set** button to scroll through the options until the Direct Sunlight mode icon:



appears blinking on the LCD.

3. Press the **Right Rotation** button and note that the Diffused Sunlight mode icon:



is now displayed.

To set the SolaBlades® for direct sunlight:

This procedure assumes that the system has been set for the Diffused Sunlight mode.

1. Make sure that the system is in the Automatic Mode (if it is not, press the **Auto.Manu** button to put it in the Automatic Mode).
2. Repeatedly press the **Set** button to scroll through the options until the Diffused Sunlight mode icon:



appears flashing on the LCD.

3. Press the **Left Rotation** button and note that the Direct Sunlight mode icon:



is now displayed.

Locking the Controller

To prevent someone inadvertently changing the controller settings, the AWC-25 buttons can be locked.

To lock the AWC:

1. Press and hold the **Set** button for 6 seconds. This puts AWC-25 into a special mode.
2. Press and release the **Set** button until the Lock icon:



is displayed blinking on the LCD.

3. Press the **Right Rotation** button. The Lock icon is displayed steady, indicating that the buttons have been locked.



When the AWC-25 is locked, all of the buttons with the exception of **On-Off** are disabled. If any button is pressed, the Lock icon blinks to let you know that the buttons are disabled.

To unlock the AWC:

1. Press and hold the **On-Off** button for 10 seconds.
2. Note that the Lock icon is no longer displayed.

E-Light

The E-Light function automatically turns off the electric lighting of a room (or area) when sufficient daylighting is detected, and turns it on when no light is detected. This option of reducing artificial lighting when daylighting is available results in energy cost saving and it is a good practice for Green and Sustainable design.

There are two ways in which the E-Light can be connected to the system:

Directly to a contact relay in the system

Via a Dimmer switch that is connected to the system

If there is more than one Zone in the system, the E-Light can be connected to just one of them. For multiple Zones, each could have its E-Light and the setting for each would be on an individual Zone basis.

For single Zones the E-Light can be connected by way of a Dimmer switch.



The **Room Occupancy Sensor** (if present) overrides the **E-Light**.

To enable an E-Light connected to a contact relay:

The E-Light may be enabled in either the Automatic or Manual mode.

1. Press the **Zone** button until the Zone attached to the E-Light is displayed in the Zone icon.
2. Repeatedly press the **Set** button to scroll through the options until the E-Light icon:



appears blinking on the LCD.



If the E-Light is disabled, "0" is displayed in icon.

3. Press the **Right Rotation** button. Note that the letter "F" is displayed in the icon and the icon display goes steady.

To disable an E-Light connected to a contact relay:

The E-Light may be disabled in either the Automatic or Manual mode.

1. Press the **Zone** button until the Zone attached to the E-Light is displayed in the Zone icon.
2. Repeatedly press the **Set** button to scroll through the options until the E-Light icon:



appears blinking on the LCD.



If the E-Light is enabled, "F" is displayed in icon.

3. Press the **Left Rotation** button. Note that "0" is displayed in the icon and the icon display goes steady.

Setting the E-Light Dimmer:

If your E-Light is connected to a Dimmer switch, you can set the intensity of the E-Light as follows:

1. Press the **Zone** button until the Zone attached to the E-Light is displayed in the Zone icon.
2. Repeatedly press the **Set** button to scroll through the options until the E-Light icon:



appears blinking on the LCD.

3. Press the **Right Rotation** button to increase the intensity, or press the **Left Rotation** button to decrease the intensity. The intensity level ranges from 0 (off) to 9 (maximum) and is displayed in the icon.

Room Occupancy Sensor

A Room Occupancy sensor is a device that detects if anyone has entered the area, in which case, it turns the daylighting on. When the area is not occupied, the sensor turns the daylighting off and darkens the room. This option of reducing daylighting when not needed reduces the solar heat gain into the space resulting in possible energy cost savings.

The Room Occupancy sensor is a commercially available product and is not supplied as part of the Sun Tracking Automated Day Light System, but the system's circuitry can be connected to it.



If there is both an **E-Light** connection and **Room Occupancy** sensor for the same area, the **Room Occupancy** sensor overrides the **E-Light** function.

To enable the Room Occupancy sensor:

1. Press the **Zone** button until the Zone attached to the Room Occupancy sensor is displayed in the Zone icon.
2. Repeatedly press the **Set** button until the Room Occupancy sensor icon appears:



blinking on the LCD.



If the **Room Occupancy** sensor has not been enabled, only the contour appears.

3. Press the **Right Rotation** button. Note that the icon stops blinking and the silhouette is filled.

To disable the Room Occupancy sensor:

1. Press the **Zone** button until the Zone attached to the Room Occupancy sensor is displayed in the Zone icon.
2. Repeatedly press the **Set** button until the Room Occupancy sensor icon appears:



blinking on the LCD.

3. Press the **Left Rotation** button. Note that the icon stops blinking and only the silhouette is displayed.