USER GUIDE

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1. Glossary

BoS (Balance of System) - All components that make up a View Dynamic Glass system other than the insulating glass units.

Daylighting - The practice of orienting windows or other openings on a façade that brings in natural light to the space and provide effective internal lighting.

Electrochromic – A type of smart window technology that uses a solid state coating made up of nano-scale layers of metal oxides. A small electrical voltage moves ions between layers to change states.

HVAC – Heating, Ventilation & Air Conditioning system.

IGU (Insulating Glass Unit) - Two or more lites of glass spaced apart and hermetically sealed to form a single glazed unit with an air space between each lite.

IGU Array – A group of IGUs connected to the same Window Controller and controlled collectively.

Window Controller – Local controller that provides the electrical voltage signal to each IGU.

Zone – Dynamic Glass windows that are controlled as a single group.

2. Overview

Thank you for purchasing a View Dynamic Glass system. This guide contains the information you need to operate and maintain your View Dynamic Glass system.

Customer Support: 855-478-8468 (GR8-TINT) or support@viewglass.com

If you have further questions about the operation of your system, contact View's knowledgeable support staff. They are ready to answer questions about the operation, programming, and maintenance of your system and can also direct you to the technical information specific to your system configuration.

2.1. What is Dynamic Glass?

View Dynamic Glass represents a big step forward in building facade technology. With View Dynamic Glass, windows are no longer a static component in a building - it is a responsive façade solution for optimum solar control and occupant comfort (figure 1).

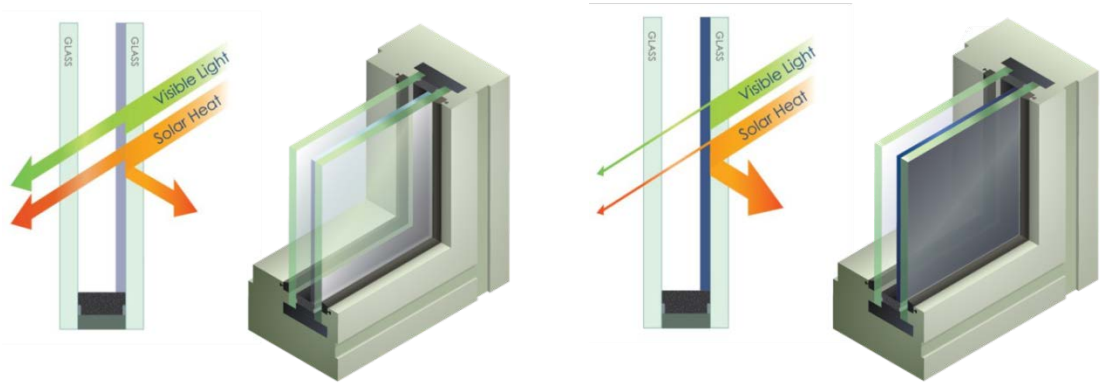

Figure 1 – Dynamic Glass in clear and tinted states

2.2. Benefits of Dynamic Glass

A BETTER VIEW. A stunning view blocked by blinds or marred by glare is not really a view at all. View Dynamic Glass allows you to look at—and be inspired by—your view 24 hours a day.

NATURAL LIGHT. The value of natural light to the human condition is well documented. With View's intelligent design, you can optimize the amount of daylight entering a building, 365 days a year.

OCCUPANT COMFORT. Everyone wants to sit next to a window – until it gets too hot or so bright you can't see. View's intelligent design manages this automatically, keeping inside conditions comfortable even when things outside are not.

INTELLIGENT CONTROL. Total control when and where you want it. View Dynamic Glass incorporates intelligent controls that automatically adjusts the condition of the window for optimal daylighting, energy savings, or visual and thermal comfort. Manual adjustments can be made through a wall switch unit, web interface, or mobile application.

FREEDOM OF DESIGN. Designers and architects rejoice. With View Dynamic Glass, you no longer have to choose between expansive glass facades and increased HVAC and shading complexity. You are free to create innovative designs that maximize your vision while improving energy efficiency.

ENERGY EFFICIENCY. Heating, cooling, and lighting are substantial costs in a building. View Dynamic Glass is an energy-efficient product that drives down HVAC and lighting costs. Cooling peak load and energy consumption are significantly reduced, allowing downsizing of HVAC systems and cost savings in annual operating costs. Architects and owners can realize a major contribution to LEED certification with the use of View Dynamic Glass.

3. Controls Packages

There are three controls packages available for a View Dynamic Glass System. The controls package determines what inputs are available to control the zones in the system.

3.1. Select

In the Select controls package, each zone is manually controlled using a wall switch or the optional View Touch app.

3.2. Sense

In the Sense controls package, zones are automatically controlled based on internal or external light levels using a light sensor. The Sense package can still include manual override capability using wall switches or the optional View Touch app.

3.3. Intelligence

In the Intelligence controls package, zones are automatically controlled based on the calculated position of the sun and characteristics of the zone. The Intelligence package may also include light sensors that adjust to local weather conditions and can still include wall switches or the optional View Touch app. Refer to section 7 for the sequence of operation for Intelligence control.

4. Wall Switch Instructions

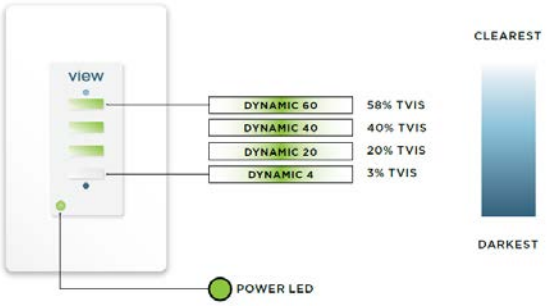

Figure 2 – Wall Switch Diagram

Responsive Control

View Dynamic Glass provides unprecedented control over the amount of light and heat entering a building by switching between clear and tinted states. View's manual wall switch gives users the freedom to change tint states at any time by a push of a button.

Operation

- The wall switch will change the tint state of the View Dynamic Glass (figure 2). The four vertical buttons correspond to the four tint states, ranging from darkest (Dynamic 4) to clearest (Dynamic 60).
- To change the tint state of the glass, press the desired button once. The button will start flashing indicating the glass is transitioning to that tint state.
- If a tint button is flashing (indicating the glass is in transition), pressing another button will not have any effect. Once the button is solid the glass can then be changed to another tint state.
- Transition time will depend on the size of the glass and environmental conditions (refer to section 6). Wait until the tint button stops flashing before pressing another button.

Power

- The circular LED at the bottom left of the wall switch indicates the Dynamic Glass system is powered.
- The system's power save mode will initiate after 8 hours of switching inactivity. At this time the window will transition to the clearest state (Dynamic 60). After another 2 hours, power will be turned off and the glass will transition to its unpowered state. All tint button LEDs will be dark at this point. The power LED should remain lit.

Troubleshooting

Symptom: All tint button LEDs are off

- The window may have entered power save mode and turned off. Press any of the buttons to reactivate.
- Check for power. The circular LED on the bottom left hand corner should be lit green.

Symptom: All tint button LEDs are flashing

- The controller is in an error state. Hold the top and bottom buttons at the same time for approximately 10 seconds to clear the error.
- Ensure that the window is connected to the window controller.

5. Transition Details

When View Dynamic Glass is tinting, it will exhibit a "theater curtain" effect during transition. The transition will begin along the long edges and gradually move towards the center. The time this effect will be apparent for depends on:

(i) size of the window - the transition will be longer for larger windows and varies from 10 -45 min for temperatures > 0^{o}C

(ii) ambient temperature - the transition time increases at sub-zero temperatures. View Dynamic Glass will effectively transition down to -10^{o}C with the windows taking almost twice as long to transition at these temperatures.

6. Maintenance Mode

- View Dynamic Glass does not require maintenance beyond what is required of an industry standard insulating glass unit. Each IGU however will go through a short maintenance cycle during unoccupied hours, sometime between 12am – 5am. This is performed automatically without the need of customer intervention.
- Balance of System components do not require routine maintenance.
- Operational status of the windows can be verified through the system's HTML interface.

7. Intelligence Control

Overview

This section describes the sequence of operation of a View Dynamic Glass system with Intelligence control.

The sequence of operation is dependent on the type of schedule implemented:

- Occupied Schedule/Period
- Unoccupied Schedule/Period
- Custom Schedule/Period

Occupied Schedule/Period

- Default schedule will be Mon – Fri, sunrise to sunset.
- Under glare conditions (based on light penetration depth with respect to work space), glass will transition to its darkest state to reduce occupant discomfort. Under all other conditions glass will go to a state that maximizes daylight while balancing heat gain.
- Example: On clear days - when there is direct sun penetration, glass will transition to its darkest state. As the sun moves away and not in the direct viewing angle of the user, the glass will transition to a lighter state depending on the season.
    - On cold days glass will transition to clear or 40% state to allow for passive heat gains
    - On hot days glass will transition to 20% or 40% to limit heat gain while still allowing for daylight
- Example: On cloudy days - glass will transition to clear or 40% state as there will be no direct glare and minimal heat gain.
- Users can manually override the glass using a wall switch, mobile application or html interface. Control reverts back to Intelligence by a post-override time-out:

Wall switch	1 hour time-out
Mobile or html application	User selectable time-out ranging from 30min to 8hrs

Unoccupied Schedule/Period

- Default schedule:
  - All days, sunset to sunrise; glass will be clear
  - Sat-Sun, sunrise to sunset; glass will be in energy saver mode as follows:

Winter months	40% or clear
Spring/Fall months	20% or 40%
Summer months	4% or 20%

- Glass will be commanded to the clear state from 12 am-5 am (maintenance mode)
- Users can manually override using a wall switch or mobile application or html interface. Control reverts back to Intelligence by a post override time-out:

Wall switch	1 hour time-out
Mobile or html application	User selectable time-out ranging from 30min to 8hrs

Custom Schedule/Period

- Users can create a custom schedule to reflect exceptions to the occupied/unoccupied schedules described above. A common example is a holiday schedule.

8. Power Loss and Recovery

- The View Dynamic Glass system uses UL rated power supplies that are tested and certified to withstand power surges and other disturbances. All BoS components are tied downstream of the power supplies and should be adequately protected.
- In the event of temporary building power loss, no startup procedures are required by the user.
- Dynamic Glass will hold its tint state for approximately an hour without power, depending on the size of the IGU.
- If your system does not seem to be functioning properly after a power loss recovery, please contact View customer support at 855-478-8468 (GR8-TINT) or support@viewglass.com