



SMARTGLASS
TECHNOLOGIES

TECHNICAL SPECIFICATION

Switchable "SMART GLASS" Model PriWatt SPD



Component Switchable "SMART GLASS" Model PriWatt SPD

This guide specification has been prepared by Smart Glass Technologies as an aid to specifiers in preparing written construction documents for electrically charged switchable glass with variable light and energy transmission (PriWatt® SPD), utilizing SPD (Suspended Particle Devices) technology.

For specification assistance on specific product applications, please contact our offices above.

Smart Glass Technologies reserves the right to modify these guide specifications at any time. Smart Glass Technologies makes no expressed or implied warranties regarding content, errors, or omissions in the information presented.

PART 1 - GENERAL

QUALITY ASSURANCE

Laminated units complying with the following as applicable to specific selections made in PART 2:

Standards

- a. SGCC (Safety Glass Certification Council)
- b. IGCC (Insulated Glass Certification Council)

Certification/Ratings

- * EVA inner layer is composed of two layers of 0.030 inch material.
- * R/C (AVLV2/8), 18 AWG, two provided, 300V, Min 80C, VW-1, mechanically secured or soldered to bus bar.

UL certificate & other

- a. cULus - Recognized component to UL 962 5th edition
 - b. CSA C22.2 No. 0.4, Bonding of Electrical Equipment, Edition 4.
- Product Category IYQX2/8

PRODUCT HANDLING

Follow strict glass handling and storage recommendations of the industry standards, including any special instructions from the specialty glass manufacturer.

WARRANTIES

With proper installation & handling, provide 2-year limited manufacturer's warranty against electrical failure and delamination of materials.

While manufacturer warrants products against defects in materials, expected life of installation, with proper maintenance, is in excess of 10 years.

PART 2 - PRODUCTS

Switchable "SMART GLASS" Model PriWatt SPD

A. Manufacturer:

1. Smart Glass Technologies (www.smartglasstech.us)

B. General

1. All glass complies with ASTM C-1036-06.
2. Type and thickness shown on the Drawings or specified herein.
3. Panels will not be given a permanently etched safety certification label unless specifically directed by the Architect.

C. Materials:

1. Float glass-clear: Type 1, Class 1, Quality q3, Low Iron clear glass equal to:
 - a. Pilkington North America; OptiWhite.
 - b. Guardian Industries; Ultra Clear.

Annealed glass with manufacturer's standard EVA inner layers normally qualify as safety glass, but heat strengthening or fully tempering are also available if code requires or is desirable for specific applications.

2. Tempered glass: Comply with ASTM C-1048 and Z976.1-84 for [heat strengthened] [fully tempered] glass.
3. Lamination Layers: Two layers of 0.030 EVA (ethylene vinyl acetate).
4. SPD Film: Manufacturer's patented SPD sheet, composed of suspended particle devices, with electrical wiring.

D. Laminated Glass Fabrication:

1. Optional [clear] [bronze] [gray] [green] tinted glass consisting of an outer face and an inner face of [float] [heat-strengthened] [fully tempered] glass laminated under heat and pressure to a proprietary SPD film.

2. Glass Optical performance:

- a. Transmission (visible):
Light Type (Switched off: $\leq 10 \pm 2\%$, Switched on: $\geq 60 \pm 5\%$)
Dark Type (Switched off: $\leq 1 \pm 0.2\%$, Switched on: $\geq 35 \pm 5\%$)
- b. Scattering Effectiveness: Approximately 1 inch.

3. Fabricated Glass Thickness: Maximum Glass Sizes (for both 2 and 4 sided framing):

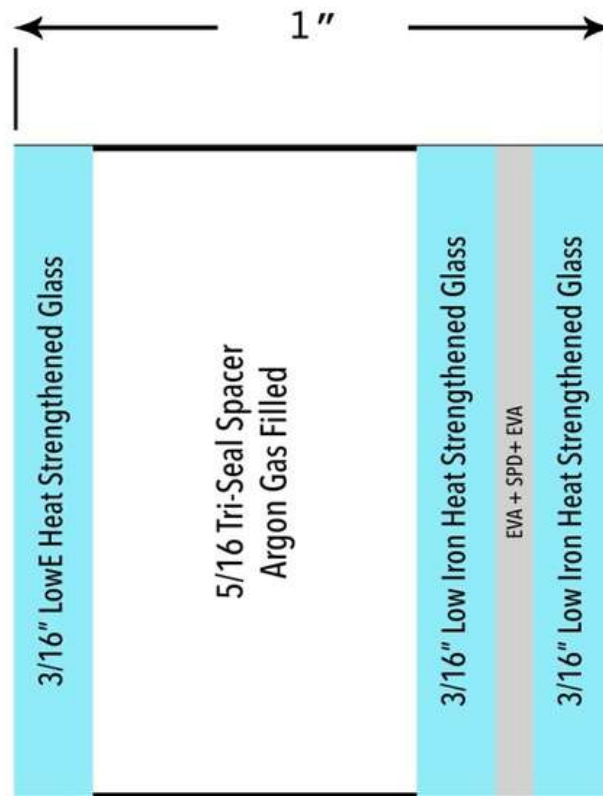
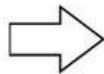
- a. 1/2" inch thickness: 47 x 120 inches.
- b. 9/16 inch thickness: 47 x 120 inches.

Retain paragraph below for exterior insulated glass applications.

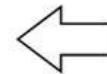
4. [Exterior insulated glass units will be composed of 1/4" inch fully tempered outer light + 5/16 inch air space + 1/2 inch laminated switchable SPD glass. Max size: 47" x 120 - Any size exceeding with require special order.



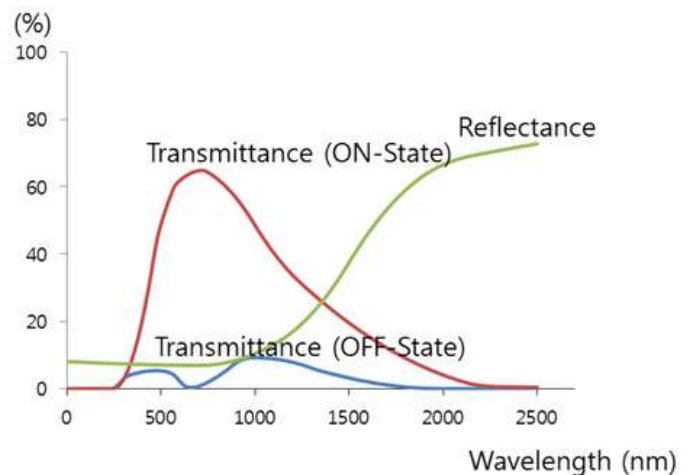
Exterior



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Interior



2.2 ELECTRICAL DEVICES AND CONNECTIONS

A. Power Supply/Controller:

1. For each fixed panel installation, provide a separate power supply/controller for each 60 square feet or fraction thereof or panel surface. Power source of 120 VAC, 60 Hz electricity must be supplied from a minimum 15A GFI circuit (20A dedicated circuit recommended). Connect power supply/controller to an accessible standard double junction box connected to ground continuity.

2. Connect not more than 18 panels to one 20A circuit.

A. Wall Switch: Standard single pole switch (recommended). Contact for wiring instructions.

B. Timer: To meet Limited Warranty requirements, a 24-hour timer IS HIGHLY RECOMMENDED to be installed for each power supply/controller OR group of power supplies/controllers to insure that the SPD glass SHALL BE in the "OFF" condition (Dark) for a minimum of 4 hours every 24 hours.

C. Coordinate specifications with power transfer hinges and sliding devices specified in other sections.

D. For all hinged and sliding door panel applications, the power supply should be located near the hinge side of door/window jamb and all installation is to conform to manufacturer's instructions.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions are critical to the timely and proper completion of this work. Do not proceed until unsatisfactory conditions are corrected.

B. After preparation of the glazing system, clean glazing channels, stops and rabbets to receive glazing materials, making free from obstructions and deleterious substances which might impair the work.

1. Clean glass edges: Remove protective coating which might fall in adhesion or interfere with bond of sealants.

2. Comply with manufacturers' instructions for final wiping of surfaces immediately prior to application of primer and glazing compounds or tapes. USE ONLY NEUTRAL CURE SINGLE COMPONENT SILICONES. DO NOT USE ACETIC SILICONES.

INSTALLATION

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work on these fore mentioned Sections.

B. Inspect each piece of glass immediately prior to start of installation.

1. Do not install items which are improperly sized, have damaged edges, or are scratched, abraded, or deficient in any other manner.

2. Do not remove labels that were provided by the glass supplier from the glass until so directed.

3. Adhere to all manufacturers' installation instructions.

C. Locate sill setting blocks of standard width and thickness at quarter points of all glass lites unless otherwise recommended by manufacturer.

1. Use blocks of proper durometer, size and thickness to support the glass in accordance with the manufacturers' recommendations per technical manual.
2. Glass lap and edge clearances must be provided according to pertinent codes and standards of manufacturers.

D. Set glass in a manner which produces the greatest possible degree of uniformity in appearance.

1. Installations of the glass in dynamic frames such as operable windows and sliding doors must meet architectural specifications in section 088000.
2. Glazing to the exterior and wet interior conditions must be wet-sealed and impervious to moisture with provisions to allow for weeping of condensation that may infiltrate the system.
3. Pressure glazing systems without positive positioning stops are not to be used with this glass.
4. Place electrical connections properly to allow access by electrician.
5. Electrical connections must exit at the head condition of any framing system in wet environment applications.

E. Cut and seal the joints of glazing gaskets in accordance with the manufacturers' recommendations, provide watertight and airtight seal at corners and other locations where joints are required.

F. Special Glazing Requirements

1. Interior Butt Glazing

- a. Panels can be butt glazed using a minimum 1/2" thickness panel.
- b. A standard neutral cure single component structural silicone sealant may be used to close the joint. A minimum of a 1/4" separation between panels is recommended.

PROTECTION

A. Protect glass from breakage after installation by promptly installing streamers or ribbons, suitably attached to the framing and held free from the glass. Do not apply warning markings, streamers, ribbons, or other items directly to the glass except as specifically allowed by the manufacturer.

B. Note: Windblown objects, welding sparks, or other material applied to the glass surface during construction may cause irreversible damage.

3.4 CLEANING

A. Clean glass prior to substantial completion. Abrasive cleaners should never be used, particularly when the surface to be cleaned has a reflective coating. Clean with a 99.9% isopropyl alcohol. Wipe framing dry.

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PRIWATT SPD GLASS specification sheet.

Item	Specification	
1. Total Transmittance (VLT)	Light Type (Switched off: $\leq 10 \pm 2\%$, Switched on: $\geq 60 \pm 5\%$) Dark Type (Switched off: $\leq 1 \pm 0.2\%$, Switched on: $\geq 35 \pm 5\%$)	
2. Operating Condition (Temperature)	-20°C ~ +90°C	
3. Response Time	Rise : < 0.5sec, Decay : < 10sec	
4. Operating Voltage	AC 0~120 VAC (max. 220 VAC)	
5. Frequency	40~60Hz (preferably 50Hz)	
6. Power Consumption	1~5W/m ²	
7. Wave type	Sine wave	
8. Dimming control	5 steps by voltage level	
9. Durability for Operation	> 100,000 cycles (on & off)	
6. IGU Construction	Exterior glass	LowE coated, Heat Strengthened, 3/16"
	Interior glass	Laminated 3/16" Heat Strengthened EVA 0.76mm SPD 0.4mm EVA 0.76mm
	Spacer	Quanex TriSeal .287 x .323 Black