



# Product Technical Manual

The Clarity Switchable Glass is a robust product that when properly installed and operated will provide many years of service. VISTAMATIC® provides a 5-YEAR/80,000-HOUR Limited Warranty of the Clarity Switchable Glass Panels. This warranty applies to product failures resulting from manufacturer's workmanship or defective materials. Selection of hardware and installation are the responsibilities of the Purchaser.



**CAUTION - READ THIS FIRST!**

**DO NOT ATTEMPT TO INSTALL THE VISTAMATIC PANELS  
ON A LIVE CIRCUIT!**

CAREFULLY READ ALL



**ATTENTION!!**

INSTRUCTIONS



**BEFORE PROCEEDING**

**FAILURE TO COMPLY WITH THE MANUFACTURER'S RECOMMENDED GUIDELINES  
MAY VOID MANUFACTURER'S WARRANTY**

**USE ONLY NON-ACIDIC SEALANTS**

Use only neutral cure (non-acidic) silicone sealants. Using any other sealants other than the recommended types may cause permanent damage.



VISTAMATIC provides wiring diagram examples for the operation of Clarity Switchable Glass Panels, however VISTAMATIC assumes no liability for the wiring of any products and recommends that the Purchaser or Purchaser's designated agent consult with a licensed electrician for compliance with area Building Codes and professional electrical system wiring.

Clarity Switchable Glass Panels are designed for commercial and residential application using 120 VAC primary power (60 Hz/1 A), and output of the AC Adaptor is 60VAC(1A).

Combined Clarity Switchable Glass Panels not to exceed sixty (96) square feet when powered by a single power supply.

UL System Approval is available through the Underwriters Laboratories (UL) Field Evaluation of an Electrically Controlled Glass Panel System at the Customers option and expense.



**CAREFULLY READ ALL INSTRUCTIONS**



**ATTENTION!!**

**BEFORE PROCEEDING**

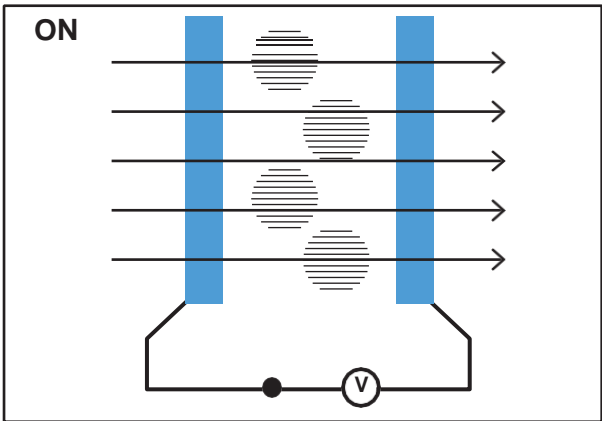
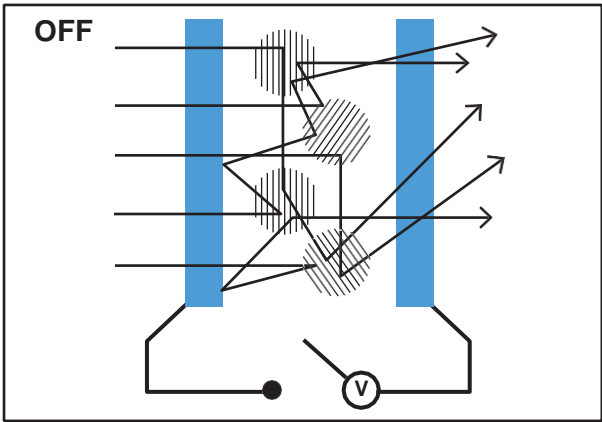
# TECHNOLOGY

**PRINCIPLE:**

When the power is off, the liquid crystal molecules are randomly oriented that scatters incident light, and The Clarity becomes translucent.

When electricity is applied, the liquid crystal molecules line up, the incident light passes through, and The Clarity looks clear.

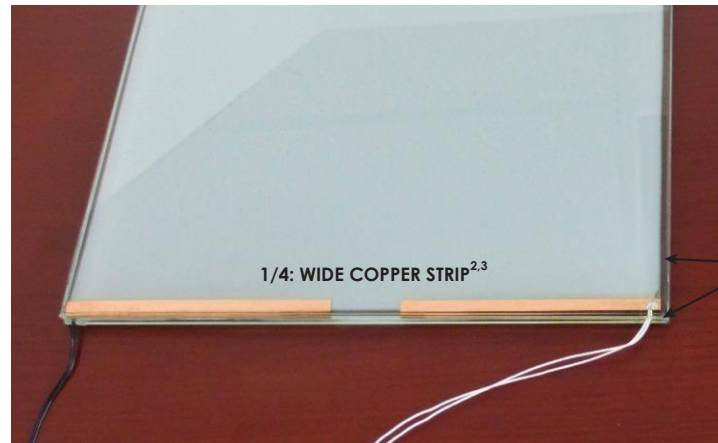
### PDLC Light Scattering Mechanism



## TECHNICAL DATA

<b>CONSTRUCTIONS:</b>	Switchable Glass: Glass + L/C Film + Glass
	Switchable IGU: Laminated Switchable Glass + Spacer + Glass
<b>FILM COLOR:</b>	White
<b>GLASS COLOR:</b>	Low-Iron
	<i>*Other colorful glass options depending on specific request.</i>
<b>GLASS TYPE:</b>	Tempered
<b>GLASS THICKNESS:</b>	4mm, 5mm, 6mm, 8mm
	<i>*Other thicknesses options depending on specific request.</i>
<b>GLASS SIZE (max):</b>	72" (W) x 120" (H) (1828 mm x 3048 mm)
<b>SPACER WIDTH:</b>	2/5" ~7/10" (10mm~18mm)
<b>SHAPE:</b>	Any shape, including holes anywhere
<b>TEMPERATURE:</b>	Storage                      -20°C to 70°C (-4°F to 158°F)
	Operation                    -10°C to 60°C (14°F to 140°F)
<b>ELECTRICAL:</b>	Driving voltage              60 ± 5 volts AC
	Current                        less than 20 mA/ft <sup>2</sup> (215 mA/m <sup>2</sup> )
	Power                          less than 0.5 watt/ft <sup>2</sup> (4 watt/m <sup>2</sup> )
<b>SWITCHING TIME:</b>	Approx. 45 milliseconds at room temperature
<b>OPTICAL:</b>	Haze                            on-state    less than 10%
	off-state    above 95%
	Transmission (visible)    on-state    above 72%
	off-state    less than 6%
<b>LIFE:</b>	Greater than 10 years (indoors) (when used, installed, and stored properly per the usage, storage, and installation specifications referenced herein)

## SAMPLE PANEL



CLEAR GLASS AREAS  
ALONG ALL EDGES

- STANDARD - 1/8"
- WET AREAS & DOORS - 1/4"

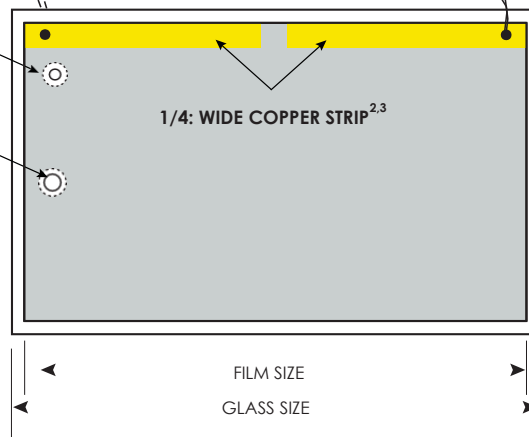
BLACK WIRES

WHITE WIRES

3 FEET WIRE LEAD (EXTENDABLE  
USING 18-20 GAUGE WIRES)

WHEN HOLES ARE IN CORNERS,  
ALLOW UP TO 1/2" CLEAR GAP  
BETWEEN FILM AND EDGE OF HOLES<sup>5</sup>

UP TO 3/8" CLEAR GAP BETWEEN  
FILM AND EDGE OF HOLES<sup>4</sup>



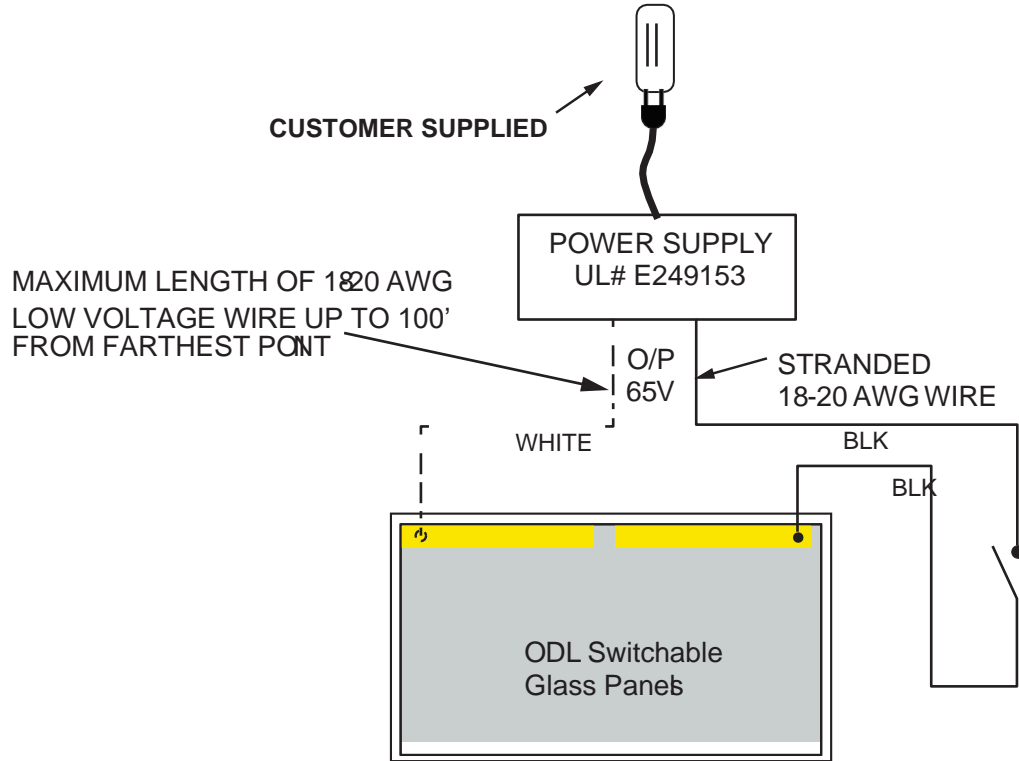
CLEAR GLASS AREAS  
ALONG ALL EDGES:<sup>1</sup>

- STANDARD - 1/8"
- WET AREAS & DOORS - 1/4"

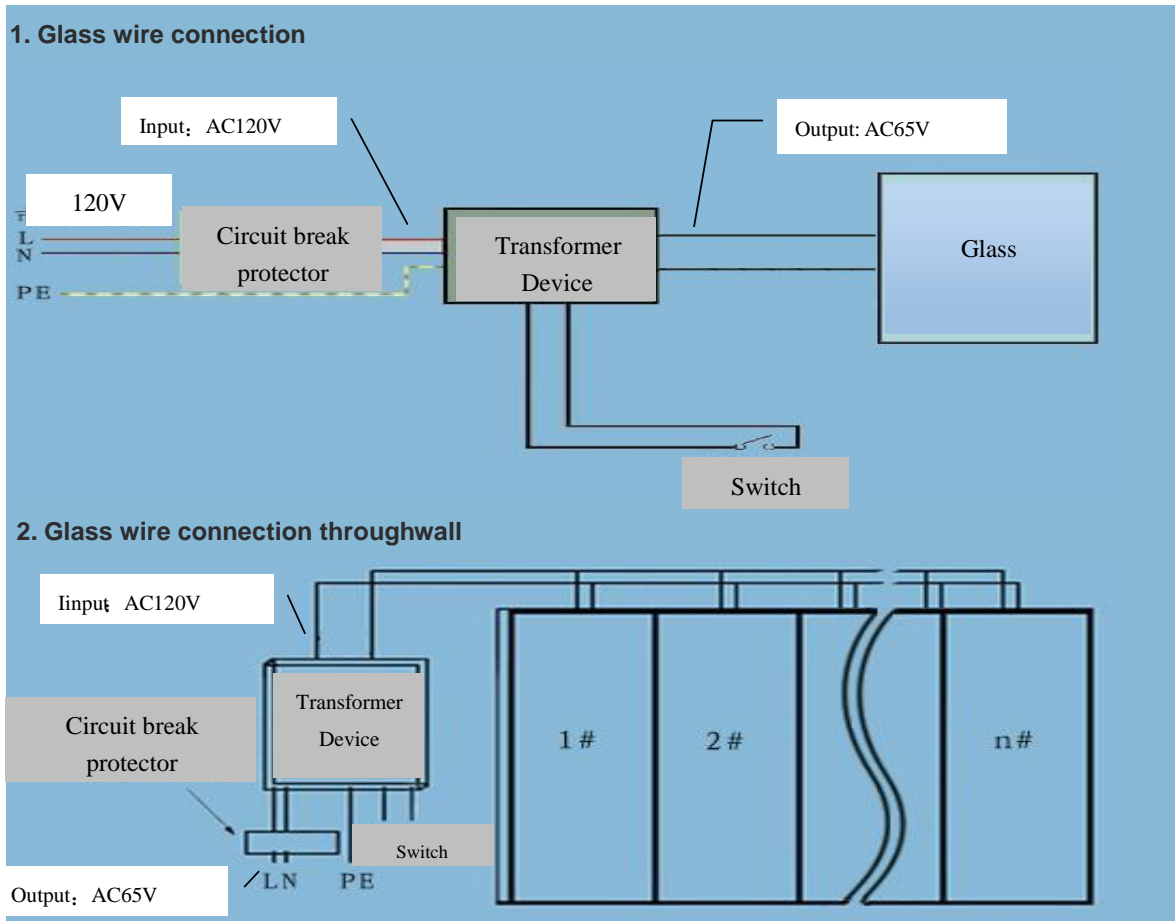
### NOTES:

1. There will be about 1/8" clear visible area along all 4 edges. The clear visible area is transparent all the time. For wet areas and doors, visible areas will be 1/4".
2. The width of the busbar (copper strip) is 1/4". The busbar can be placed along the long or short edges.
3. Edges where the electrodes are placed (vertical edges in the above drawing) must be covered by min. 1/2" (3/4" recommended). Cover min. 1/4" for other edges.
4. Off-centered holes will have a displacement of 3/8".
5. Holes in corners are displaced up to 1/2" due to more film shrinkage in corners

# SINGLE PANEL WIRING EXAMPLE



## MULTI-PANEL WIRING EXAMPLE

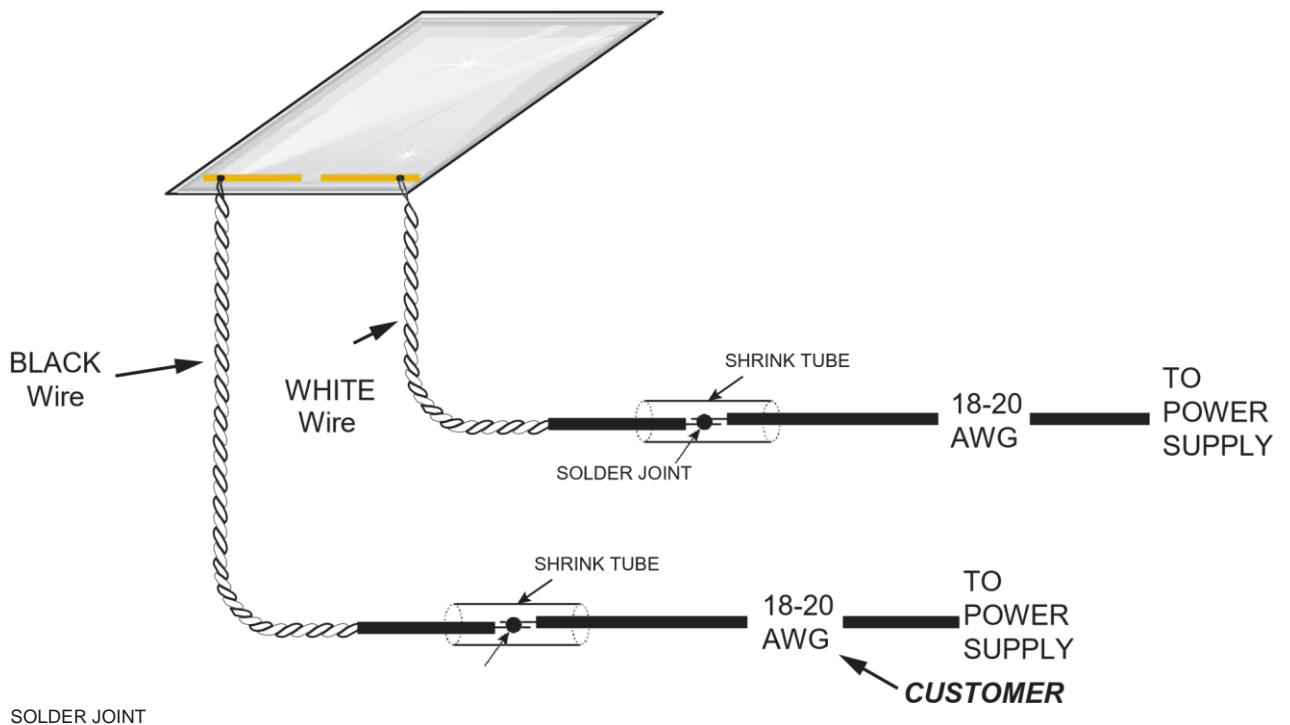


Each panel will have black and white wires. The position of yours may be in a different location than pictured above depending on design requirements.



## EXTENDED WIRING MAXIMUM LENGTH 100'

ROUTING FOR EXTENDING WIRES TO DESIRED LENGTH NOT TO EXCEED 100 FT FROM THE FARTHEST PANEL



All connections must be soldered and **SUPPLIED** sealed with shrink tubing. Wires can be extended with 20 AWG wires.

# CLARITY STANDARDS & GUIDELINES

**CLARITY STANDARDS** – all photos were taken at the same distance and angle for a precise measurement of lighting conditions. **Architects & Designers: NOTE: As demonstrated below consider the placement of any lighting near the privacy glass.**



## 1- Worse Lighting Conditions

Lights that are only on the outside of the conference room will cause an imbalance in light intensity. This will increase the haze.



## 2- Better Lighting Conditions

Lights on the outside of the conference room are higher in intensity than on the inside. This will result in a slight haze.



## 3- Best Lighting Conditions

Lights on the inside of the conference room and outside are evenly balanced in intensity and sufficiently diffused at appropriate distances.



## 4- Low Haze in Dark State (all lights OFF)

No lights on the inside or outside of the conference room will result in little haze.

## HAZE FACTOR CONSIDERATIONS

All VISTAMATIC Film/Glass are rigorously inspected for quality and clarity. Because VISTAMATIC Film/Glass contains liquid crystal (LC) material, it inherently possesses some level of “haziness” and would not exhibit the same level of clarity as regular float glass. Therefore, it is NOT recommended to butt-joint glass with non-switchable glass.

In addition, the inherent haziness is increased at wider viewing angles and with big disparities in light intensities (see diagram below). This phenomenon is normal because VISTAMATIC Film/Glass is a light diffuser and will change in haze at varying viewing angles and lighting conditions.

