SKYLINE

SDX2™ Smart Glass
Technical Guide

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At A Glance

This document provides comprehensive guidelines on Skyline's SDX2™ laminated smart glass specifications, warranty and maintenance, wiring, and more.

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Manufacturing Location

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Function

Allows a laminated panel to switch from completely opaque to transparent instantly with the application of an electrical current to an embedded layer of liquid crystal particles using proprietary controllers.

Switching Action

An array of switching options (including dimming) are available from a basic single-pole/single throw switch to advanced integration into home automation systems.

Glass Size & Thickness

Max. Size: 70" x 144"

Max. Thickness: 3/4"

Min. Thickness: 5/16"

Average Thickness: 1/2"

Energy Data

Input Power: 110–220 VAC / 50-60Hz
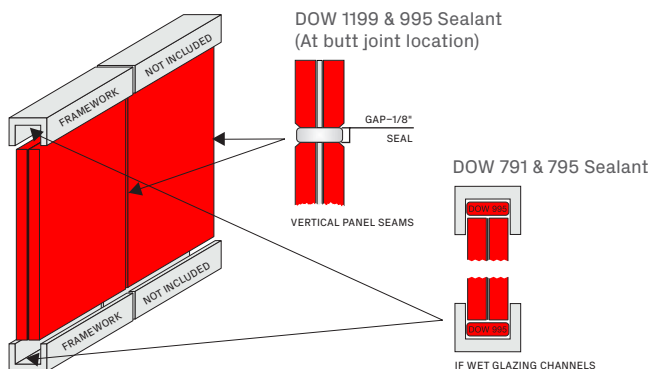
Energy Consumption:
ON: ~3 watts/ sq meter
OFF: 0 Watts in privacy state

Installation Data

Wet Glazing Sealant Specification:
See Skyline Design installation manual for additional glazing information.

Method of Action

Electrical current either aligns or randomizes liquid crystals to achieve desired transparency.

DOW 1199 & 995 Sealant
(At butt joint location)

GAP–1/8"
SEAL

VERTICAL PANEL SEAMS

DOW 791 & 795 Sealant

IF WET GLAZING CHANNELS

Composition

This product is manufactured using ANSI Z97.1 for laminated safety glass construction

Glass
EVA (Adhesive)
Smart Interlayer
EVA (Adhesive)
Glass
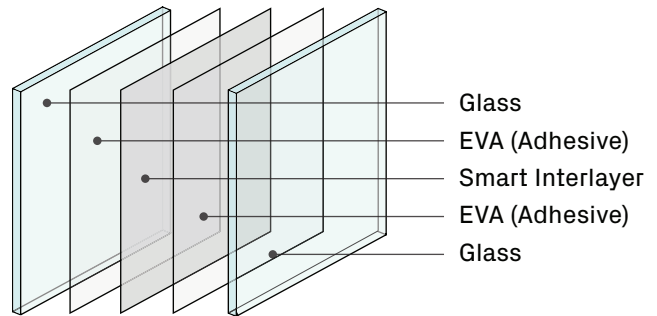
Performance Data (ON)

Parallel Light Transmission: 78%

Total Light: 80%

Haze Range: Min 2.1%, dependent on type and thickness of substrates used

Performance Data (OFF)

Parallel Light Transmission: 3%

Total Light: 65%;

Haze Range: Full, dependent on type and thickness of substrates used
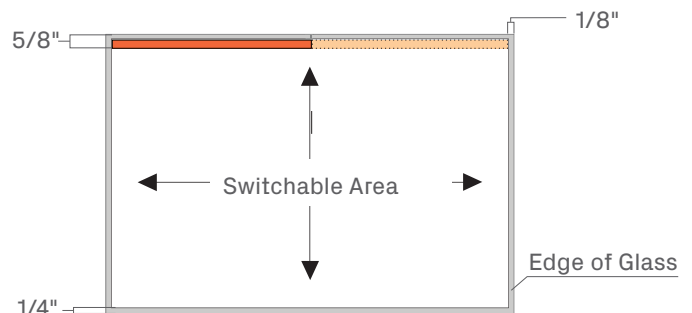
Switching Speed:

Translucent to Clear: Approx 3 ms

Clear to Translucent: Approx 150 ms

Operating Temp: -20°C to +70°C

Power Leads

Leads generally exit top center of panel—10' of lead standard

5/8"
1/8"
Switchable Area
Edge of Glass
1/4"

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Haze

SDX2 is carefully checked by Skyline's quality team for clarity before and after lamination. As it is made up of several layers (glass, EVA, and PDLC smart film interlayer), it will naturally have some haze and look different from regular clear glass.

SDX2 is designed to diffuse light, which makes it an optical product. The amount of haze can increase due to general lighting and when viewed from wide angles. However, there are ways to reduce haze by adjusting the environment where SDX2 is used.

Light shining directly on the glass from above, below, or at a parallel angle can affect the appearance of the haze.

Lighting Conditions

Strong and bright light levels inside a room will make SDX2 appear hazy when viewing from the outside.

When positioned at a direct angle you will get the highest level of transparency and lowest level of haze
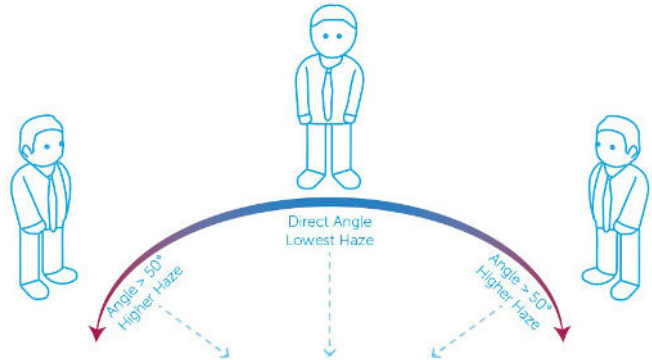
As the viewing angle becomes wider, the level of haze increases.

Lighting factors might also increase reflection, which can disturb optical properties

Viewing Angles

Haze: Min. 2.1%

Haze (Off-axis @ 45 degrees): 9-12% Viewing the glass at angles of 50 degrees and more will have higher levels of haze.


Passage of Light

The angle and type of light passing through SDX2 influence the level of haze. The materials between the glass layers, including the film and adhesive interlayers, can cause light to scatter or diffuse. This scattering, known as Wide and Narrow Angle Scattering, results in haze and reduced clarity as light is dispersed in different directions.

Haze Over Time: Outdoor Condition Testing

The graph below demonstrates how haze is affected over an extended period of time, in outdoor conditions. SDX2 films have been tested to simulate consistent use in harsh, outdoor conditions. To estimate indoor conditions, multiply the outdoor years below listed by 4. Example: SDX2 16 years outdoor ≈ 64 years indoor

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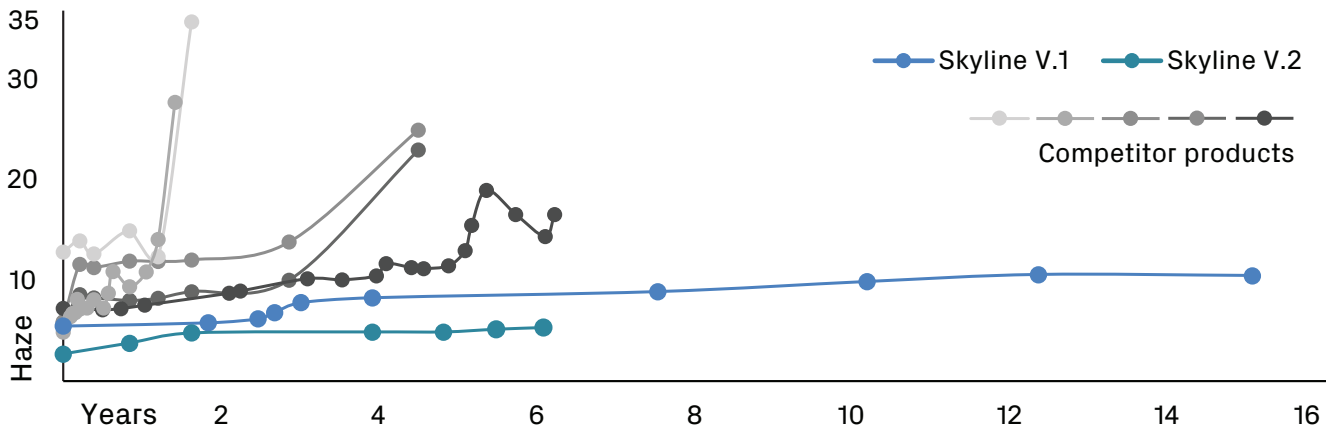
Skyline Design's SDX2 laminated smart glass is engineered and manufactured to operate without any special maintenance requirements for long periods of time. To ensure your product remains in good condition throughout its entire lifespan and to prevent damage, please follow the maintenance guidelines below. Skyline cannot guarantee products that are not cleaned and maintained according to these guidelines.

Warranty

Laminated and tempered glass furnished by Skyline Design is warranted to meet the safety criteria of ANSI Z97.1 and CPSC 16 CFR 1201 Categories 1 & 2. Tempered glass is also warranted to meet the quality and strength requirements of ASTM C1036 and ASTM C1048 for Quality Q3, Kind FT. Laminated glass will comply with ASTM C1172 and is warranted against defective materials or workmanship that results in delamination or obstruction of vision under normal conditions of use. This warranty will extend for a period of five (5) years from the date of delivery. Additionally, Skyline-supplied controllers from its manufacturing partner will be warrantied for a period of two (2) years from the date of delivery.

Routine Cleaning

Manual cleaning of SDX2 to remove accumulated dust or fingerprints is possible using glass cleaning products that do not contain vinegar, hydrofluoric acid, or phosphoric acid. Everyday home-use window cleaning materials are suitable.

Process

Do not splash water directly on the SDX2 surface.

Spray cleaner directly onto a clean, dry, microfiber cloth and wipe down the glass surface.

Do not use hard accessories or ones that contain metal, such as steel wool, metallic sponges, or blades to clean or remove dust from SDX2, as they can scratch the glass.

Dry using a towel or clean, dry cloth and a silicone-blade squeegee.

Warnings

If you notice a defect in the SDX2 glass, disconnect it from the power source immediately and contact Skyline Design's support team.

Do NOT use any silicone substances that are not approved by Skyline Design. The use of non-compliant silicone materials will cause permanent damage to the product.

Do NOT make any alterations to the system's electrical wiring.

Do NOT clean the glass when it is under direct sunlight or hot to the touch.

Do NOT allow cleaning solution to penetrate the glass rim.

Do NOT use cleaning materials that contain hydrofluoric or phosphoric acid, as they might dissolve the surface of the glass.

Do NOT use abrasive, powder-based, scratch pads, or other harsh materials.

Do NOT lean or stick any substances on the glass.

Avoid exposing the glass to extreme temperature changes, as this might result in thermal cracking.

Do NOT spray hot water on cold glass, or cold water on warm glass.
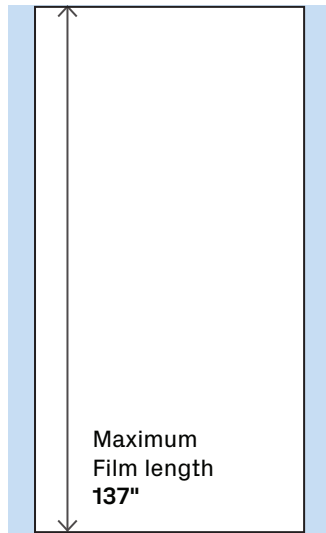
Avoid using glue or stickers that might stain and harm the surface of the glass.

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve@skyline.glass**.

This technical document provides guidelines for the placement of busbars on smart glass, outlining four options along with their respective limitations based on film length. Adherence to these configurations is crucial, and any deviations require prior technical approval from Skyline Design.
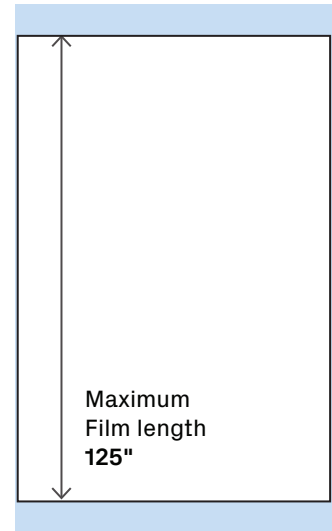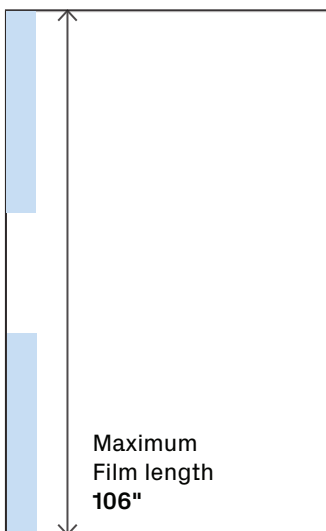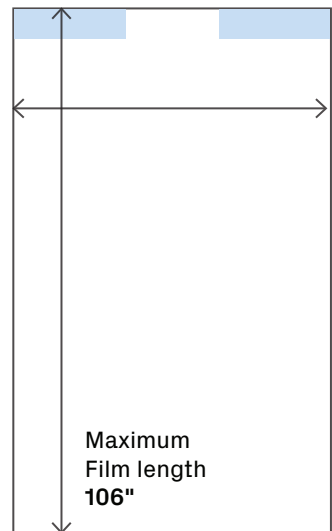
Configuration A

Both long edges

Maximum
Film length
137"

Configuration B

Both short edges

Maximum
Film length
125"

Configuration C

Single long edge

Maximum
Film length
106"

Configuration D

Single short edges
Ratio L/W < 3

Maximum
Film length
106"

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance or approval requests, please **contact Steve Spangler, national sales director at Skyline: steve⬚skyline.glass**.

This technical document provides guidelines for wiring Skyline SDX2™ laminated glass.
Skyline cannot guarantee products that are not wired according to these guidelines.
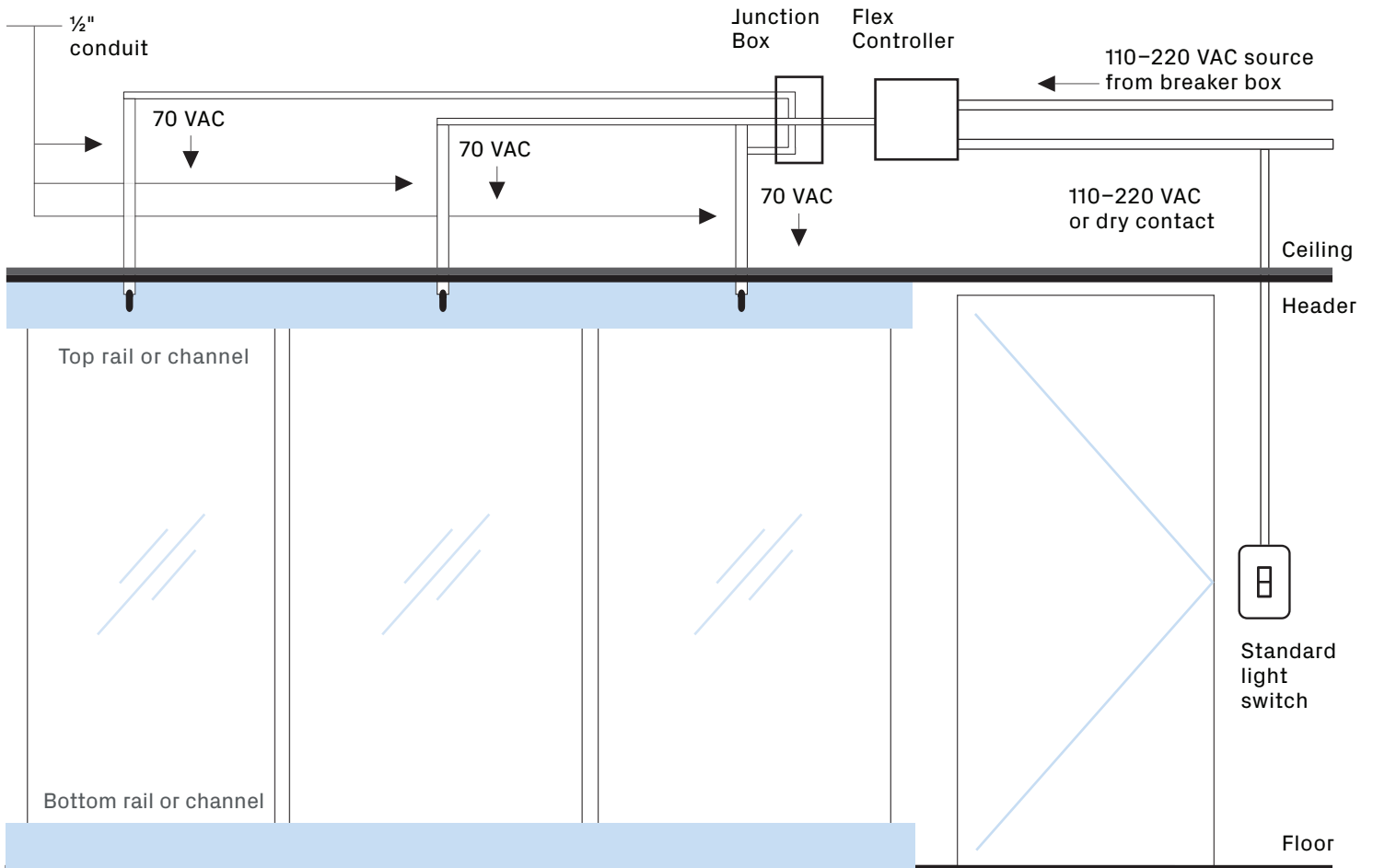
Not to scale

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve◻skyline.glass**.

This technical document provides guidelines for wiring Skyline SDX2™ laminated glass with FLEX 0-10 VDC controllers. Skyline cannot guarantee products that are not wired according to these guidelines.

FLEX 0-10 VDC
PRODUCT # GAU3-S-D-1

Terminal	Polarity
Cascade IN	+
COMMON	–
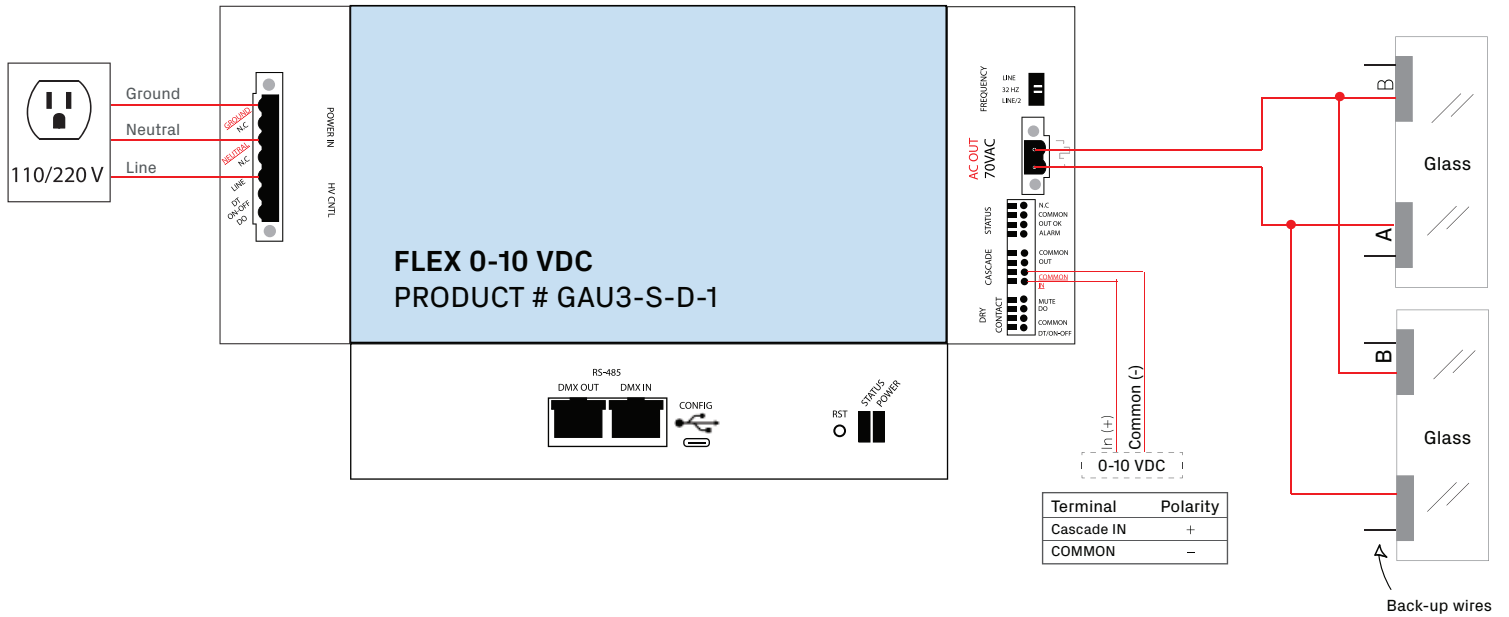
WARNING: Never connect voltage higher than +10 VDC to the cascade interface. Doing so will permanently damage the controller.
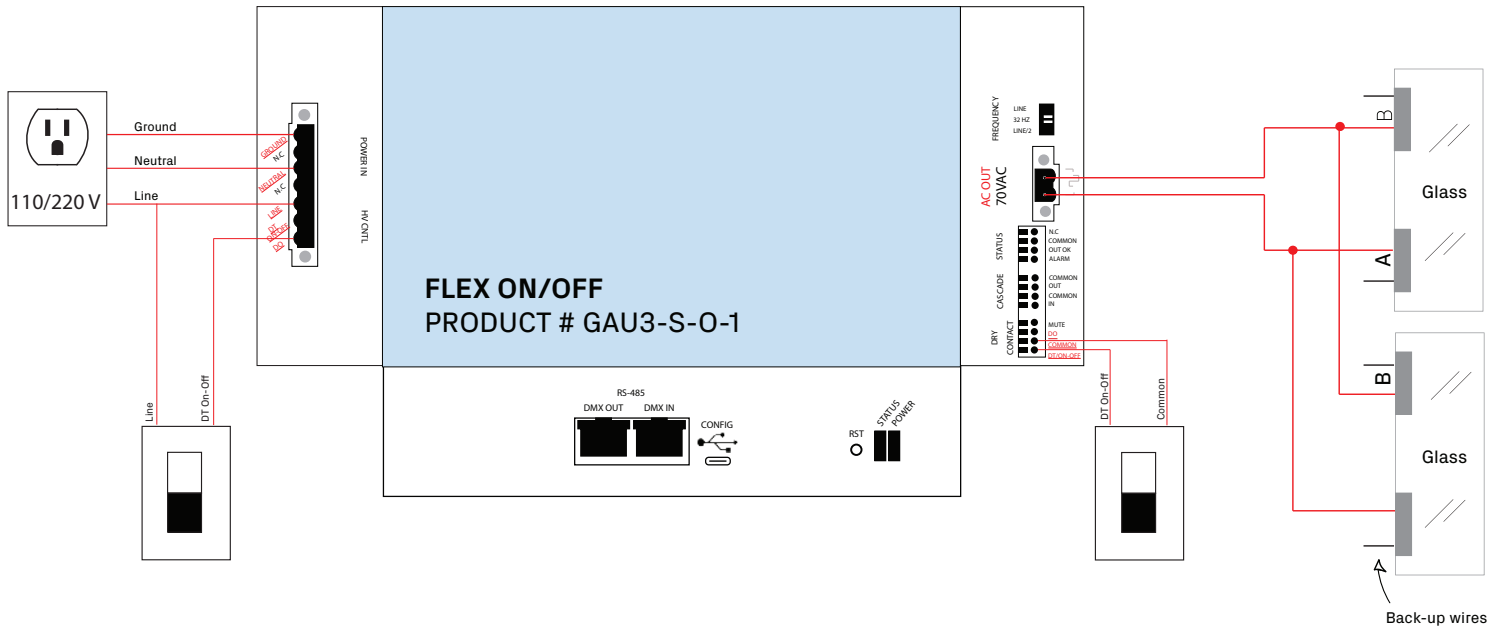
For "Smart Home" programming and operation features, please contact the original product manufacturer for additional wiring details.

7-pin and 2-pin connector specification included with controller
MSTB 2.5 HC/2-STF-5.08 2-pin
MSTB 2.5 HC/7-STF-5.08 7-pin
(Manufacturer: Phoenix contact)

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve⬛skyline.glass**.

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This technical document provides guidelines for wiring Skyline SDX2™ laminated glass with FLEX ON/OFF GAU3-S-O-1 controllers. Skyline cannot guarantee products that are not wired according to these guidelines.

WARNING: Never connect high voltage (110/220 VAC) to the dry contact interface. Doing so will permanently damage the controller.

7-pin and 2-pin connector specification included with controller
MSTB 2.5 HC/2-STF-5.08 2-pin
MSTB 2.5 HC/7-STF-5.08 7-pin
(Manufacturer: Phoenix contact)

Determining Left or Right Side of Controller Connection:

On the left side of the controller, connect the switch either to **Line** and **DT On-Off/DO**
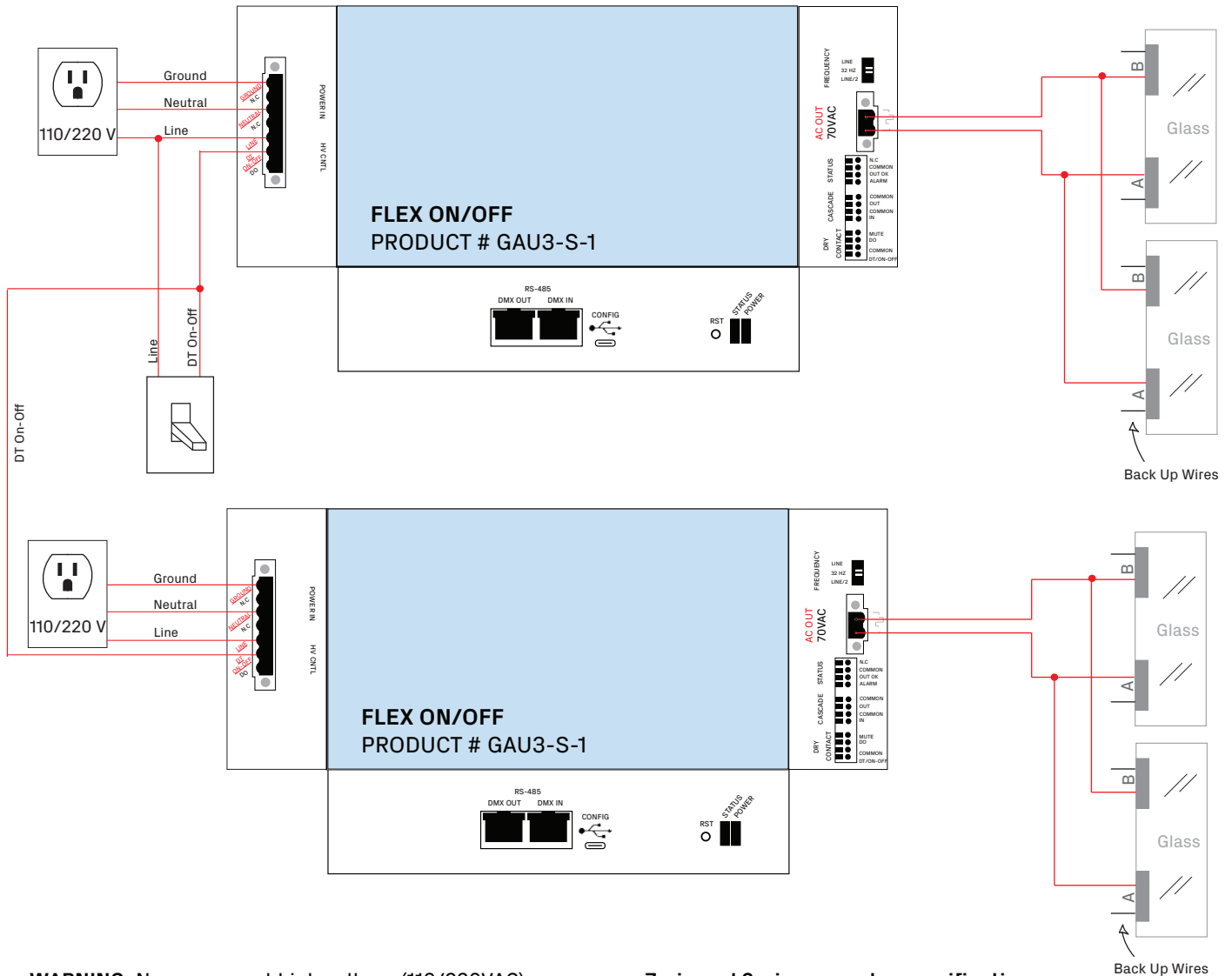
On the right side of the controller for a dry contact switch, connect **DT On-Off/DO** and **Common**

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve⊡skyline.glass**.

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This technical document provides guidelines for wiring Skyline SDX2™ laminated glass with *multiple* FLEX ON/OFF controllers. Skyline cannot guarantee products that are not wired according to these guidelines.

WARNING: Never connect high voltage (110/220VAC) to the dry contact interface. Doing so will permanently damage the controller.
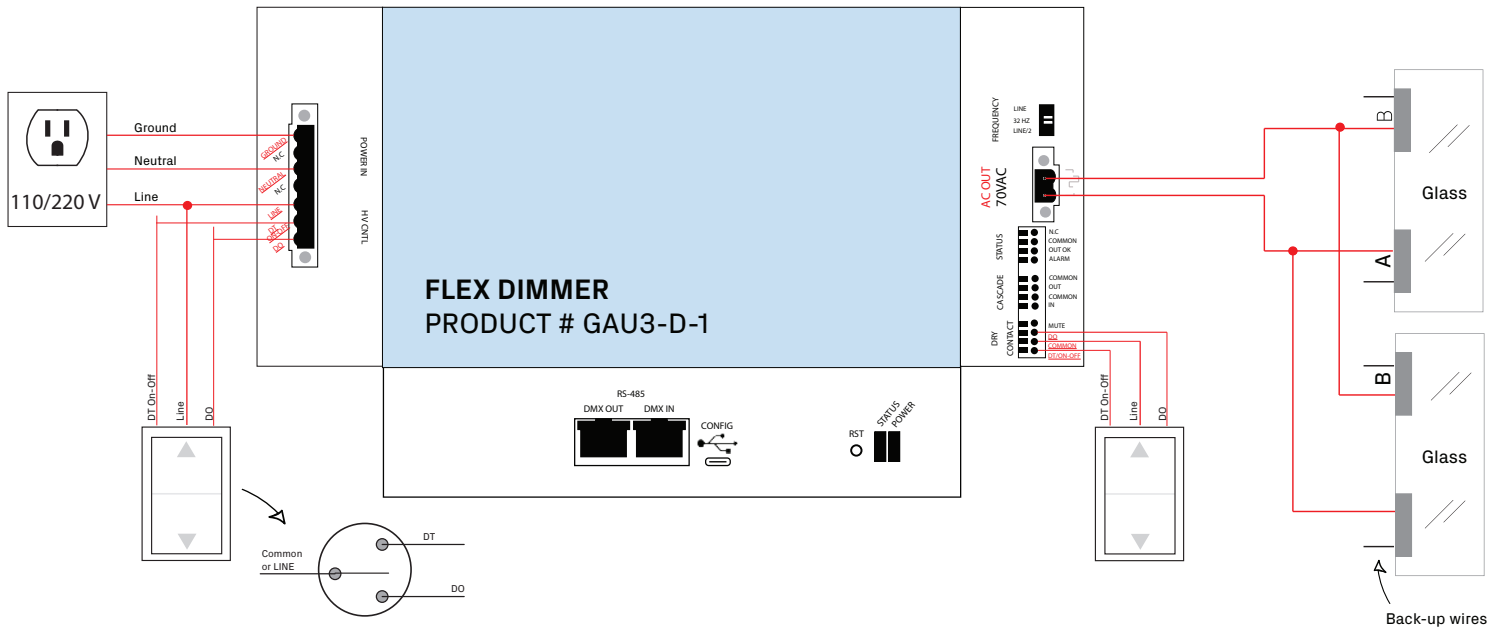
For "Smart Home" programming and operation features, please contact the original product manufacturer for additional wiring details.

7-pin and 2-pin connector specification included with controller
MSTB 2.5 HC/2-STF-5.08 2-pin
MSTB 2.5 HC/7-STF-5.08 7-pin
(Manufacturer: Phoenix contact)

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve⬛skyline.glass**.

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This technical document provides guidelines for wiring Skyline SDX2™ laminated glass with FLEX DIMMER ONLY GAU3-D-1 controllers. Skyline cannot guarantee products that are not wired according to these guidelines.

WARNING: Never connect high voltage (110/220 VAC) to the dry contact interface. Doing so will permanently damage the controller.

7-pin and 2-pin connector specification included with controller
MSTB 2.5 HC/2-STF-5.08 2-pin
MSTB 2.5 HC/7-STF-5.08 7-pin
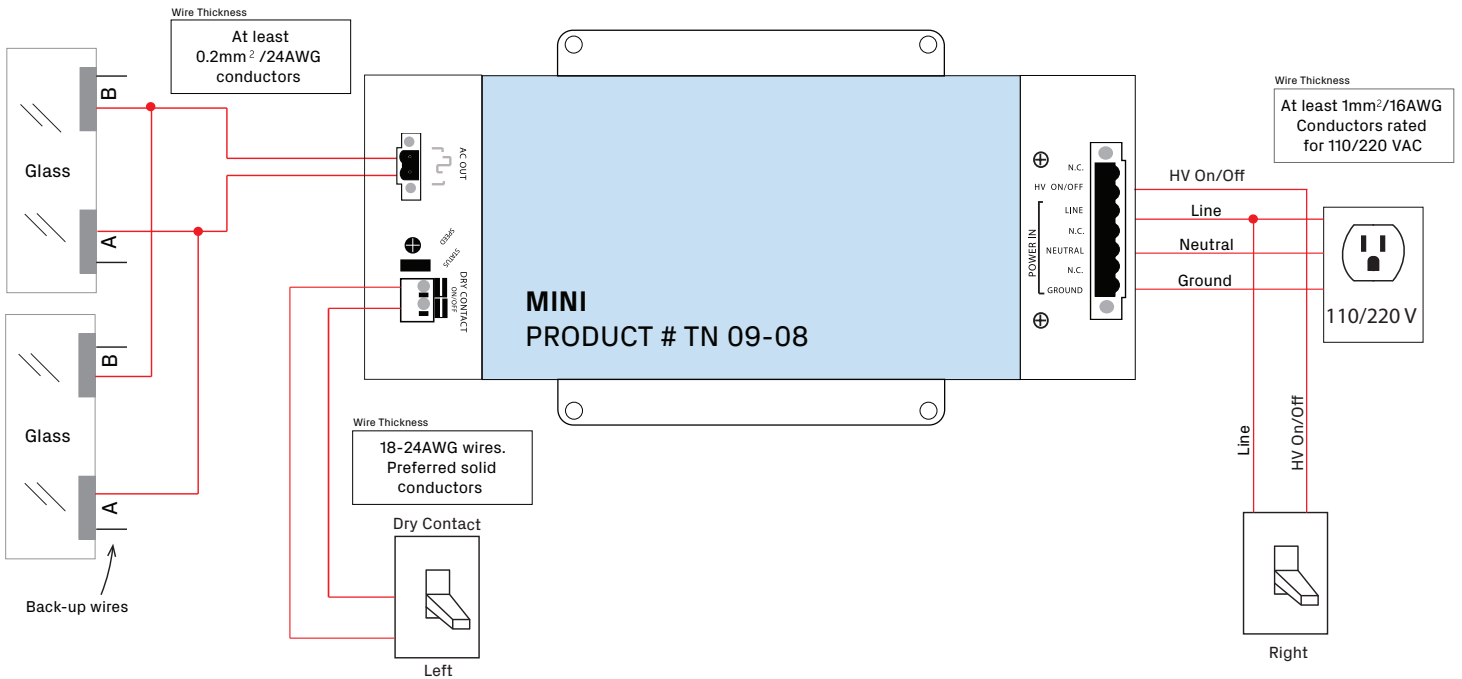(Manufacturer: Phoenix contact)

Determining Left or Right Side of Controller Connection:

On the left side of the controller, connect the switch either to **Line** and **DT On-Off/DO**

On the right side of the controller for a dry contact switch, connect **DT On-Off/DO** and **Common**

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve☐skyline.glass**.

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This technical document provides guidelines for wiring Skyline SDX2™ laminated glass with MINI ON/OFF controllers. Skyline cannot guarantee products that are not wired according to these guidelines.

WARNING: Never connect high voltage (110/220 VAC) to the dry contact interface. Doing so will permanently damage the controller.

7-pin and 2-pin connector specification included with controller
MSTB 2.5 HC/2-STF-5.08 2-pin
MSTB 2.5 HC/7-STF-5.08 7-pin
(Manufacturer: Phoenix contact)

Determining Right or Left Side of Controller Connection:

Right Side
Connect the switch either to **Line** and **HV On-Off/DO**

Left Side for a dry contact switch
Connect **DT On-Off/DO** and **Common**

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve▣skyline.glass**.

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Skyline offers a comprehensive smart glass package that includes all necessary wiring, controllers, and multiple control options. Below are the common control methods available through Skyline for managing your smart glass and their specifications:

Remote / GAU-PAR-RMT

Designed specifically to work with SDX2 smart glass, and easy to pair with the receiver or touch panel switch.

Working Voltage: 12V (1x 23A battery)
Working Frequency: 433MHz
Encoding Mode: Imitation learning code
Working Current: 18mA

Receiver / GAU-RCV-ON-0

This RF/Wi-Fi switch module enables remote control of SDX2 smart glass.

Product Type: RF/Wi-Fi Switch Module
Input Voltage: 90V - 250V AC / 50Hz
Current: 10A
Wi-Fi Frequency: 2.4GHz - 2.4835 GHz
Operating Temperature: -10°C to +40°C
Case Temperature: Tc: +80°C (Max.)
Operation Range: RF 30m, Wi-Fi 100m (depending on network equipment and installation location)
Dimensions (WxDxH): 0.7" x 1.86" x 2.03"
IP Rating: IP20

Touch Panel Switch / GAU-PRT-TPO-US

This touch panel replaces traditional switches, offering Wi-Fi and RF interfaces.

Model: WS-EU-RF / WS-US-RF
Voltage: 90-250V AC, 50/60Hz
Max. Current: 10A/Gang; Total 10A
Wireless Protocol: Wi-Fi 2.4GHz + RF433MHz

When adhesion or sealing of SDX2 panels is needed, only neutral sealants suitable for use with laminated glass should be used. Skyline cannot warranty products that use a sealant different from the list below.

The following silicone sealants are proven to be compatible with SDX2 Smart Glass:

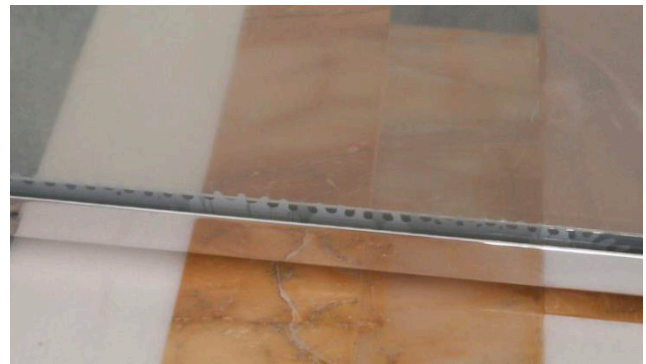**Den Braven**
Hercuseal NOF

Dow Corning
791, 795

GE
Multisil SCS5500

Other silicone sealants may contain plasticizers and solvents that can damage SDX2 and cause delamination of the EVA layer. This damage is irreversible.

Please be aware that using a sealant different from the ones listed above can cause damage to the SDX2 panels. Skyline Design does not provide any warranty or undertaking regarding the silicone sealants to be used on SDX2 panels. Consequently, Skyline Design shall not be liable to its customers or any third parties for direct or indirect, special, or consequential damages, including, without limitation, any damage, loss, or injury to the SDX2 panels arising from or related to the use of any sealant on SDX2 panels, even if the customer or third party uses one of the silicone sealants listed above.

Examples of potential damage from using incompatible silicone sealants:

By following these guidelines, you will ensure the reliable operation, longevity and warranty of the product. For further assistance, please **contact Steve Spangler, national sales director at Skyline: steve@skyline.glass**.