Glasshape®

ON OFF

Switch Shield®
SWITCHABLE GLASS - BY GLASSHAPE

Complete certified glass solutions designed for your application

Privacy Glass Solutions

Windows normally allow you to see as well as to be seen. However, it is sometimes desirable to be hidden from prying eyes. SwitchShield® Switchable Glass offers you this privacy at the flick of a switch. A unique technology of SwitchShield® allows it to be switched from an ordinary-looking clear glass to a translucent glass, ensuring optimal vision control. All it takes is a humble switch that makes it as simple as turning the lights on.

Benefits

- Change from clear to translucent instantly and uniformly over the entire surface area
- More comfort and privacy
- Protection of interior furniture and other valuable items from UV damage
- Safety and security
- Operates on ordinary AC voltage (110VAC)
- Requires very little power (less than 7.0 watts per m2)
- Superior optical qualities relative to other privacy glass products

Applications

- Architectural windows
- Skylights
- Interior partitions
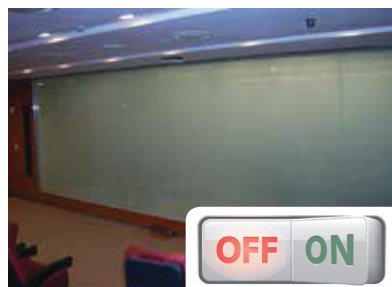- Glass covering products
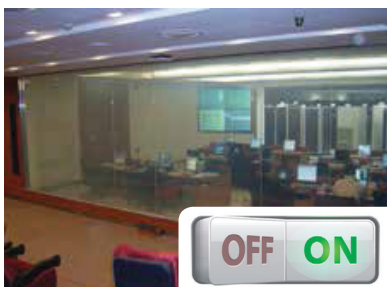- Boardrooms
- Bathrooms

Architectural Windows

OFF **ON**

OFF **ON**

OFF **ON**

OFF **ON**

Interior Screens

OFF **ON**

OFF **ON**

Boardrooms

OFF **ON**

OFF **ON**

Patterned

Privacy Glass

Switchshield® as a Rear Projection Screen

SwitchShield® can be used as an innovative and dynamic advertising display. The interior can be open during working hours by turning the window transparent (on). It can then be used for advertising display by turning the window off.
The switching function can be controlled automatically by using a timer or light sensor.


Benefits

- High resolution
- Large viewing angle
- Projection equipment is hidden behind the screen (rear projection)
- High acoustic performance: avoiding noise from the projector
- Eye catching screen: transparency at will (ON)
- Safety and security: laminated glass
- Easy to clean
- Cost-effective relative to other display media

Applications

- Shop Fronts
- Façades
- Conference rooms
- Control rooms
- TV Studios
- Exhibitions
- Showrooms
- Boardrooms
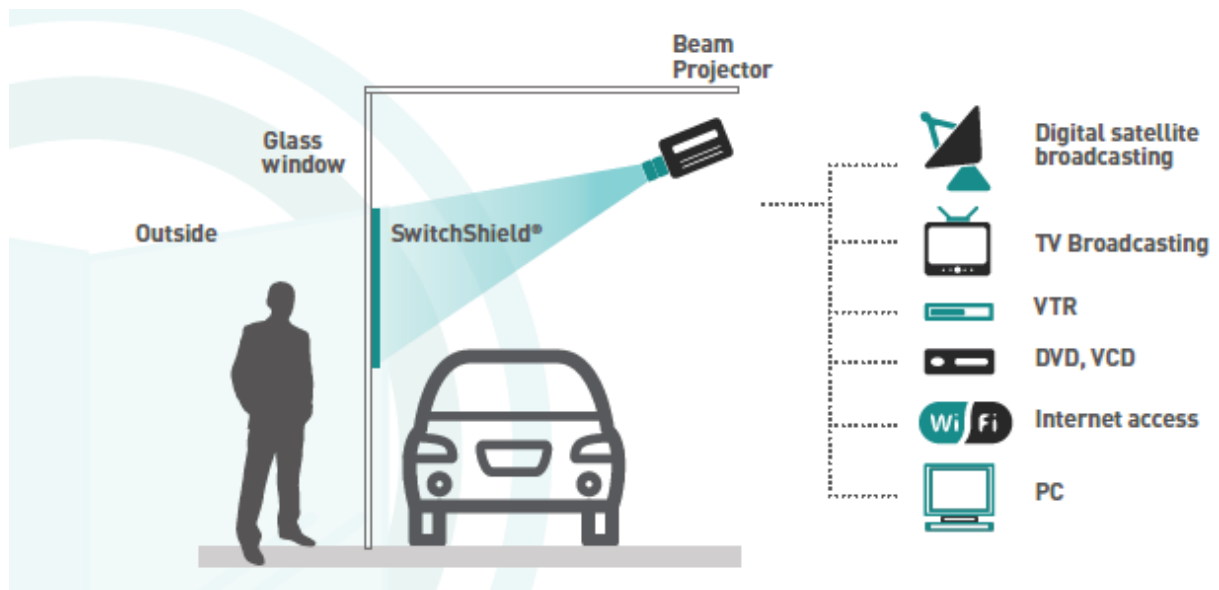
Technical Specifications

[Power OFF]

[Power ON]
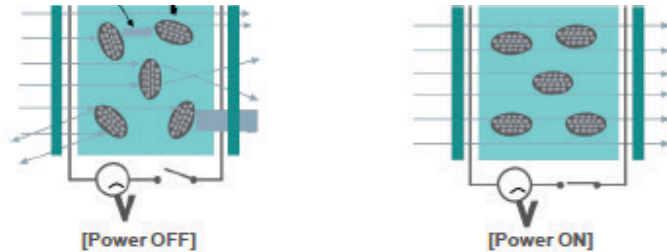
SwitchShield® Screen Glass
1. Two outside layers of float glass
2. Two layers of laminating adhesive film inside the glasses
3. SwitchShield® film in the center Thickness of interlayer film (one layer): 250µ

Sizes
Flexible to a maximum size of:
– SwitchShield® glass:
Max 1820mm x 3100mm
– Min 300mm x 300mm

Available Colours
– Clear (Milky White)
– Bronze
– Green
– Blue

Environmental
Storage and operation: -20°C to +60°C
Life: More than 5 years
Warranty: Five years

Optical Characteristics
Operation mode: Transparent (power ON)/Opaque (power OFF)
Parallel light transmittance: 75 ± 3% (ON)/10 ± 1% (OFF)
Sunlight transmittance: 80 ± 1% (ON)/60 ± 1% (OFF)
Haze: 2 ± 1% (ON)/80 ± 3% (OFF)
UV blocking: More than 98%

Electrical Characteristics
Operating voltage: 110VAC
Frequency range: 50 ~ 60Hz
Amperage: 100mA per square meter (for 110V)
Power consumption: About 7W per square meter (for 110V)
Switching speed: Less than 1 second
From frosted to clear: 100 milliseconds
From clear to frosted: 400 milliseconds

Durability

No.	Test Item	Test Condition	Result
1	Switching	On (1sec) Off (1sec),110VAC. 3 Million Times	Passed
2	High Temperature	70°C/14 Days	Passed
3	High Temp./High Humid	50°C/95%RH, 14 Days	Passed
4	Low Temperature	-20°C/14 Days	Passed
5	Heat Cycle	-20°C 70°C (2Hrs/Cycle), 200 Cycles	Passed
6	Weathering	KS L 2004 (Laminated Glass)	Passed
7	Heat Resistance	KS L 2004 (Laminated Glass)	Passed

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Technical Details for SwitchShield® Switchable Glass

SwitchShield® can be used as an innovative and dynamic advertising display. The interior can be open during working hours by turning the window transparent (on). It can then be used for advertising display by turning the window off.

The switching function can be controlled automatically by using a timer or light sensor.

1. How can SwitchShield® be used?
   – Electrical Privacy Glass (instant change from transparent to opaque by switching)
   – Safety and security (laminated glass), Protection from UV damage
   – As a projection screen

2. What is the composition of SwitchShield® ?
   – Glass 3mm - 6mm/EVA Film/Liquid Crystal Film/EVA Film/Glass

3. What is the maximum size of SwitchShield® ?
   – 1820mm x 3100mm
   – Maximum economical size is 1200mm x 2700mm

4. What does SwitchShield® weigh?
   – 27kg per square meter (for 11mm thickness)
   – 17kg per square meter (for 7mm thickness)

5. Can SwitchShield® be curved?
   Yes, please contact our sales team as there are some limitations.

6. Can SwitchShield® be made from toughened glass?
   Yes.

7. Can SwitchShield® be drilled?
   Yes. The holes should however be drilled during manufacture. A customer drilling holes after wards will make our warranty void. Please discuss your requirements with Glasshape when ordering.

8. Can SwitchShield® be laminated with polycarbonate instead of glass?
   Yes. The price of polycarbonate is slightly higher than SwitchShield®. Please discuss your requirements with Glasshape when ordering.

9. Can SwitchShield® be coloured?
   Yes. The standard colours are milky white and bronze. Green and blue are also available.

10. Can SwitchShield® be used for blackout purpose?
   No. In opaque mode, the light is scattered, not blocked.

Glazing SwitchShield®

Product Name	Thickness	Max Size	Dimension of Edge Protector	
			T	W
SwitchShield® 07	6.5mm	980mm x 1500mm	7mm	
SwitchShield® 11	10.5mm	1820mm x 3100mm	11mm	11.5mm
SwitchShield® 13	12.5mm	1820mm x 3100mm	13mm	

When ordering SwitchShield®, the size should include the dimension of edge protector(s).
The standard colour of SwitchShield® is normal clear glass. Bronze, blue and green colours are available only for SwitchShield® 11 and 13.
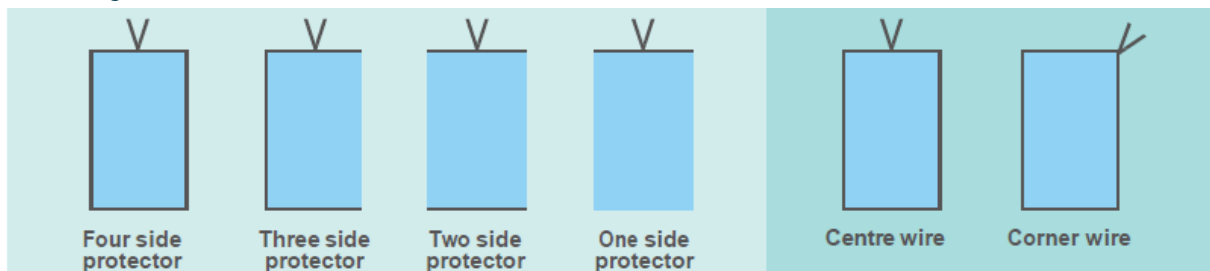
1. Plastic Edge Protectors

A plastic edge protector should be located on the bus bar edge. This edge protector must not be damaged or removed. Edge protectors for the other three edges are optional. Please specify the type of edge protector you require when ordering.
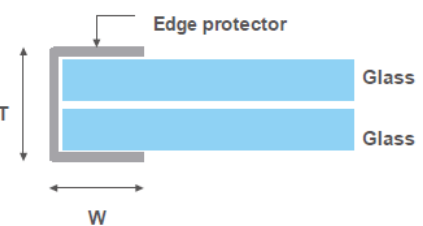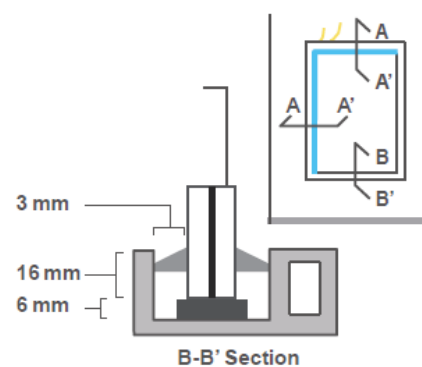

2. Electrical Wires

Electrical wires come out from either the corner or the centre of an edge. When ordering, please indicate the position you require. The standard length of electrical wires is one metre.

3. Glazing in a frame

Four side protector | Three side protector | Two side protector | One side protector | Centre wire | Corner wire

The drawing on the right shows the minimum rebate requirements. Frames used for traditional curtain walls can be used. The metal frame should be electrically grounded and no moisture allowed to enter it. To fix SwitchShield®, the installer must check that the limits of the dimensions are adhered to. Any pressure increase on the glazing is to be strictly avoided. The electrical wires from SwitchShield® should be placed at the upper edges of the SwitchShield® panel. Glasshape recommends that SwitchShield® panels be wet glazed using a structural sealant such as Dow Corning 995 of 795. Sealants must be non-acidic and non-solvent based.


B-B' Section

Important Note

1. Remove all spurs around all electrical wires and be sure that their coverings are not broken.
2. Do not load wires into the sash and also ensure that the edge protectors are not damaged.
3. When making holes in the sash for the wires to pass through, ensure rubber bushings are inserted into the holes.
4. When SwitchShield® is installed in a metal sash frame, ensure that the frame is electrically grounded.

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4. Door Glazing

In doors and windows that can be opened, we recommend SwitchShield® be framed on all four edges. The frame should be sturdy enough to take all the pressures exerted on the movable parts when the doors are opened and closed. As per the electrical connection, an electrical wire must be placed from the opening frame to the door casing or the standing window frame. A metal flexible conduit similar to those used in alarm systems or electrical catches will protect this wire.
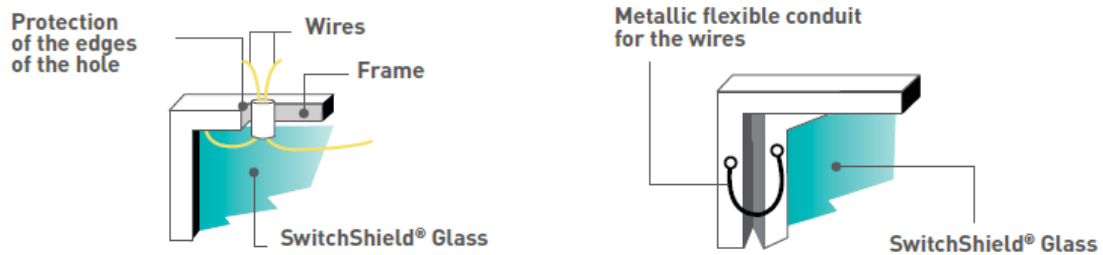

5. Sliding Door Glazing

In the case of sliding doors, the connection has to be made by means of a permanently connected cable. This cable should be as short as possible and an appropriate device must be used to prevent the cable from being cut or jammed while opening or closing the sliding door. Systems with sliding contacts or any other system that interrupts the current between the glass and the power supply must not be used.

Placing Multiple SwitchShield® Panels Side by Side
SwitchShield® panels can be placed side-by-side with transparent silicone seal placed between them.
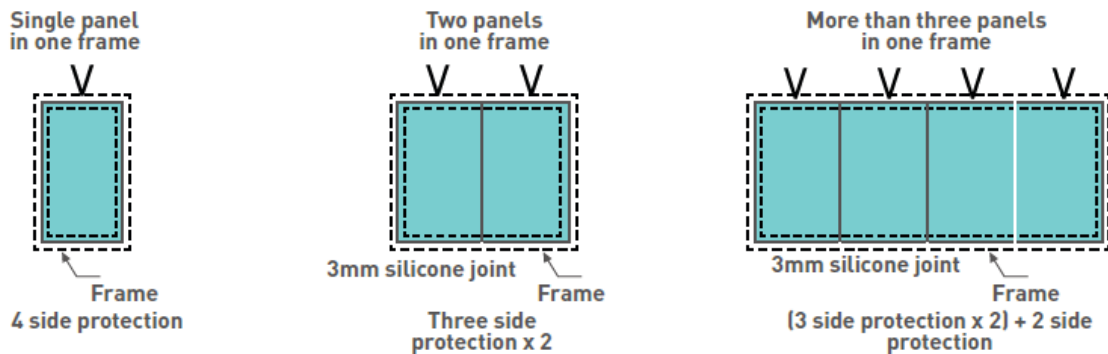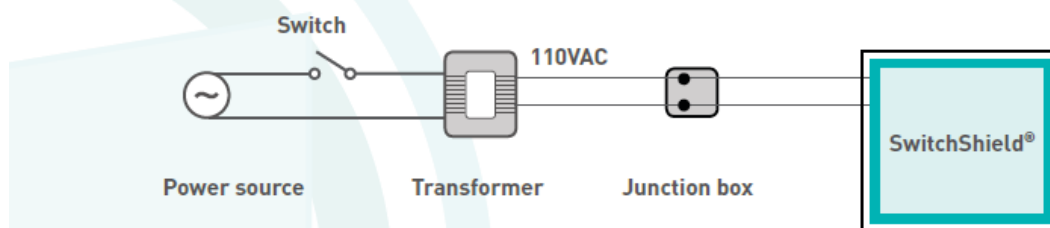

Note: Use only neutral, non-acetic acid-type silicone sealants.

6. Electrical Wiring

The electrical voltage to SwitchShield® should be 110VAC. If the voltage of your power source is higher than 110VAC, it must be adjusted by using a transformer.
Please refer to the following electrical circuit diagram:

The voltage at the secondary side of the transformer should be 110VAC. Calculate the capacity of the transformer to secure VA per a square meter of SwitchShield® as follows:

Capacity of transformer = Total area of SwitchShield® (SQM) x 20VA
It is recommended to install an Earth Leakage Circuit Breaker (ELB) between the power source and switch when exposure to water or moisture (such as exterior glazing or interior use near bathrooms or kitchens) is anticipated.
Besides the manual operation of switches, automatic switching can be achieved by using relay controls such as a timer or a light sensor.
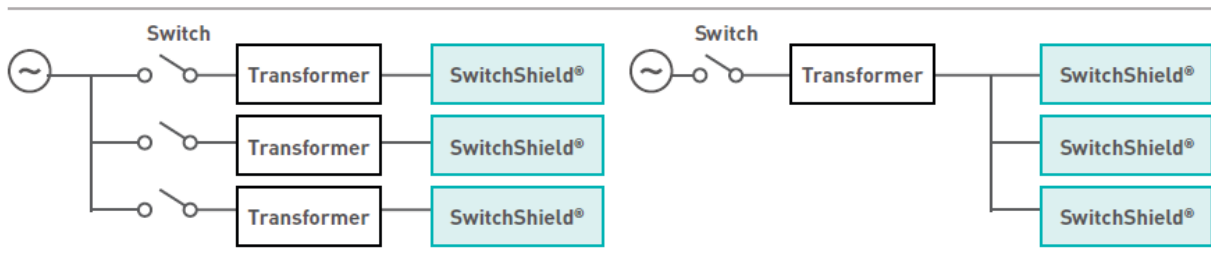
7. Maintenance

In order to prevent damage to the glass being caused by abrasive contaminants, special care must be taken during the initial cleaning, during the construction period, or when glass surfaces are severely soiled.

The glass surfaces must first be flushed with clean water to remove as many contaminants as possible. With the glass surfaces still heavily wetted, carefully work a rubber squeegee from top to bottom removing excess water. Caution must be taken to ensure that any remaining abrasive materials do not become trapped between the glass surface and the squeegee, otherwise the glass surfaces may become scratched.

The glass should then be cleaned with a clean, soft, grit-free cloth and a mild, non-abrasive, nonalkaline cleaning solution and rinsed immediately with clean water. Excess water should be removed from glass surfaces with the squeegee.

For routine cleaning, use a conventional window washing solution or mild soap and water. Uniformly spray the cleaning solution or apply it with a clean, soft, grit free cloth and rinse thoroughly. The glass surfaces should then be either wiped dry with a clean, grit free cloth or squeegeed dry. Do not allow any metal or hard parts of the cleaning equipment to come into contact with the glass surfaces.

8. Troubleshooting

SwitchShield® does not turn clear when switched ON:
- Check the fuses in the switch box
- Check the electrical source in the primary of the transformer
- Check the switch if the transformer is not powered on
- Check the voltage in the secondary of the transformer
- Check the connections of the electrical wires to the SwitchShield® panel
- Check the input voltage to the SwitchShield® connections. If the voltage is over 110VAC and SwitchShield® does not turn clear, measure the electrical resistance of SwitchShield® and discuss with Glasshape.

SwitchShield® does not turn completely clear when the switch is turned ON:
- Check that the glass panels are connected in parallel
- Check the connections of the electrical wires on the SwitchShield® panel
- Check whether the output voltage of the transformer remains at 110VAC. If the input voltage is normal and the output voltage is less than 110VAC, replace the transformer. If the input voltage is normal and the output voltage is over 110VAC, replace the SwitchShield® panel.

Application and Installation

1. Can SwitchShield® be used in external windows?
Yes. Please discuss the details with Glasshape when ordering.

2. Can SwitchShield® be used for doors?
Yes, both opening and sliding doors. See the "Installation Manual".

3. Can SwitchShield® be used as a projection screen?
Yes, rear (back) projection in opaque state.

4. At what distance should the projector be installed?
A few metres from the glass depending on the size of the image and projectors. (60 inch size : 2~3m, 80 inch size : 3 ~ 4m).

5. What silicone can be used when glazing SwitchShield® ?
Neutral, non-acetic silicone sealant without plasticizers and solvents.

6. Is SwitchShield® easy to install?
Yes, the installation/glazing is the same as that for ordinary glass except for the electrical wiring. Before installation (fitting, glazing) of SwitchShield®, it is necessary to consider the wiring from the power source to the SwitchShield® panels. For more details, please refer to the Installation Manual.

Electrical

1. What is the voltage required for SwitchShield® ?
Below 110VAc (50/60Hz). If the power source is higher than 110V, a transformer should be used (please refer to the Installation Manual).

2. What is the capacity of a transformer required for SwitchShield® ?
It depends on the surface area of SwitchShield® and the number of control zones. 25VA per square metre of SwitchShield® is required.

3. Does Glasshape supply the transformer?
No. Glasshape recommends that our customers buy an appropriate transformer from an electrical equipment supplier.

4. Is there any particular requirement for a switch?
No. Any type of switch can be used. (i.e. a normal wall switch) The switch should be fitted to the primary side of transformer.

5. What is the power consumption in ON mode?
Approx 7.0W per square metre of SwitchShield® .

Glasshape® provide customised turnkey glass solutions offering a full range of certified specialist glass products. Our proven global success is backed by comprehensive warranties and validated by international accreditation.

Our service and specifically engineered glass solutions aim to exceed our clients design and performance requirements. We work with our clients to confirm their needs and establish the appropriate glass solutions. The Glasshape® turnkey package from consultation through to installation is available to help ensure a worry-free and successful project is delivered every time.

Our full range of specialist products are tailored to suit industries operating in demanding conditions and requiring high performance standards. Industries include architectural, marine, machinery, transportation, storm, security and ballistic.

Glasshape® has customers around the globe with Glasshape® locations in New Zealand, Australia and USA.

Our Vision:
To become a world leader in the manufacture and supply of innovative, certified glass solutions tailored to meet the demanding requirements of highly specialised industries by differentiating on product quality, customer service and distribution excellence.

Our Mission:
Offer our customers a uniquely specialised glass solution that works for them every time.

Our Values:
- Treat customers, suppliers, and the community like we would our own family
- Tirelessly focus on brand, process improvement and delivery excellence by having a culture of continuous improvement
- Invest in the development of a great team, producing great products that completely satisfy the needs and desires of our diverse range of customers

Founded in 1986, Glasshape® has mastered and refined the science of Curved and Bent Glass, Toughened Glass, Laminated Glass and Double Glazed Glass, with uncompromising quality and service. The Glasshape® Group is one of Australasia's leading specialist processing, bending, toughening and laminating glass companies.

Glasshape® is a successful company with double digit growth. We are a 100% customer focused company. To meet the increasing demand from architects, designers and their respective, highly discerning clients, Glasshape® have a commitment to continuous innovation and technology investment. Our customers understand that with our expertise, their designs can be transformed into sensational glass realities.

About Us

Complete certified glass solutions designed for your application

Glasshape®

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