

GLB Smart GLASS Catalogue



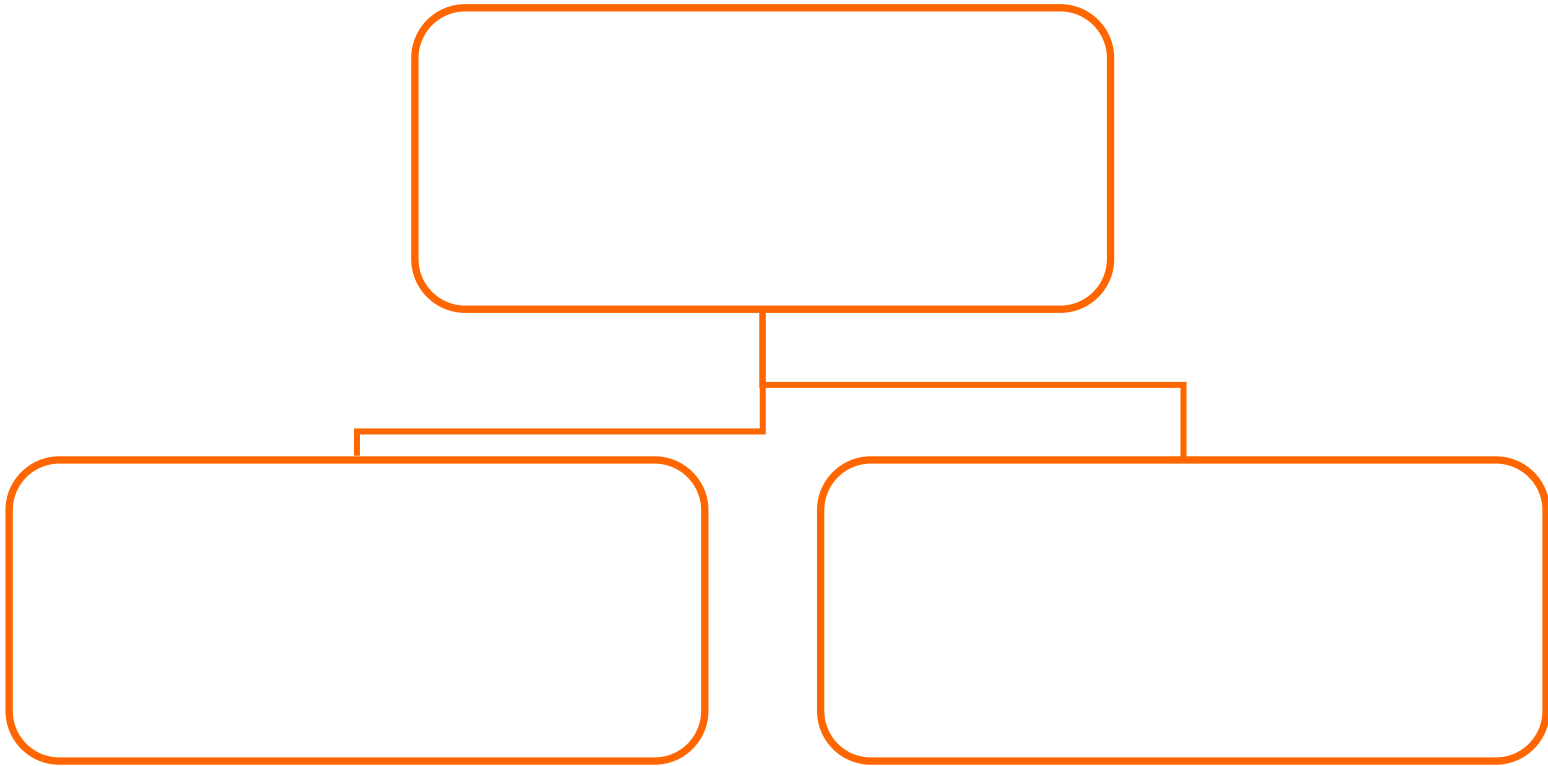
GLB



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GLB

CERTIFICATIONS

Certificate No. 18913/200876258



中国建材认证
CCT

兹证明
Qingdao Boroito Trading Co., Ltd.

The established and implemented quality management system complies with GB/T19001-2008 idt ISO 9001:2008 requirements for producing and selling Tempered Glass, Laminated Glass, Insulated Glass, Processing and Soling Boroito

Verification Scope:
Structural Tempered Glass, Laminated Glass, Insulated Glass, Processing and Soling Boroito

Address: No. 658, Jingshangshan Road, Huangdao Dist., Qingdao, China

Further certification regarding the scope of this certificate and applicability of GB/T19001-2008 idt ISO 9001:2008 requirements may be obtained by contacting the organization.

The certificate is valid for 3 calendar years from the date of issue and its validity is maintained through annual surveillance. The result of annual surveillance is shown on Notice of Annual Compliance.

Address: Qianhuang, Chuyang District Jiaozhou 190004, P.R. China

Date of Issue: Aug. 7, 2013
Date of Renewal: 7/1/2016

Signed by: [Signature]

China Building Material Test & Certification Group Co., Ltd.



Certificate of Compliance

No. QA1508051YIG050

Certificate's Holder: Qingdao Boroito Trading Co., Ltd.
Holder: No. 658, Jingshangshan Road, Huangdao Dist., Qingdao, China

Certificate of Compliance Mark:



Product: Laminated glass
Model(s): 33.1, 33.2, 33.3, 33.4, 44.1, 44.2, 44.3, 44.4, 55.1, 55.2, 55.3, 55.4, 66.1, 66.2, 66.3, 66.4, 88.2, 88.3, 88.4, 101.02, 101.03, 101.04, 121.03, 121.04, 121.05, 121.06, 151.53, 151.54, 151.55, 151.56, 1919.4, 1919.5, 1919.6

Verification to: Standard: EN 14447:2005/AC:2005
related to CE Declaration(s): 8/30/2011 (Registration for the Marketing of Construction Products)

Expired Date: 10/10/2016

Issue Date: 08 August 2013

China Building Material Test & Certification Group Co., Ltd.

CSI CERTIFICATION

PRODUCT COMPLIANCE SCHEDULE

Qingdao Boroito Trading Co., Ltd.

Address: No. 658, Jingshangshan Road, Huangdao Dist., Qingdao, China

This schedule identifies the Certified Production on which the PAS Mark and CE Number may be used.

AS/NZS 2208-1996 Safety glazing materials in buildings (Incl. Annexes 1 & 2)

Product Description	Safety organic backed mirror
Classification	Grade "A"
Minimal Glass Thickness	6 to 6mm
Product Model number	Single layer monolith type - central business city material class 2 (non-ventilated) as "monolith"

Issue Date: 24th October 2014
Expiry Date: 19th October 2017

Issue Date: 24th October 2014
Expiry Date: 19th October 2017

PAS-Mark

Issue Date: 24th October 2014
Expiry Date: 19th October 2017

SPF Solarglas Solar Glass

Class: U1
U1

Handelsname Trade name: Jinjing Low Iron Solar Glass, Solartrier-S 3.2 mm

Hersteller Distributor: QINGDAO JINJING CO., LTD

Produktions Test number: QING0803200SGZ

Qualität Validity: 05.2015 – 04.2018

Das Glas Jinjing Low Iron Solar Glass, Solartrier-S in der Dicke 3.2 mm ist Vertriebs durch die Qingdao Jinjing Co., LTD, No.201, Jianshangshan North Road, Economic & Development Zone, Qingdao, China ist als SPF-Verfahren Zertifizierung von Solarglas Version 2 durchlaufen und wurde mit Solarglas (Solarglas) zertifiziert und der Klasse U1 zugewiesen. Das Glas wurde das Qualitätslabel SPFG08-07-U1 versehen.

This glass Jinjing Low Iron Solar Glass, Solartrier-S of 3.2 mm thickness sold by Qingdao Jinjing Co., LTD, No.201, Jianshangshan North Road, Economic & Development Zone, Qingdao, China has passed the SPF-procedure "Certification of Solar Glass" version 2 and was certified as solar glass (solar thermal) and assigned to class U1. This glass has been awarded the quality label SPFG08-07-U1.

F. Flückiger
Felix Flückiger
SPF Testing

Certificate of Compliance

No. QA1508051YIG050

Certificate's Holder: Qingdao Boroito Trading Co., Ltd.
Holder: No. 658, Jingshangshan Road, Huangdao Dist., Qingdao, China

Certificate of Compliance Mark:



Product: Tempered glass
Model(s): 3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 12mm, 15mm, 19mm

Verification to: Standard: EN 12150-2:2004
related to CE Declaration(s): 8/30/2011 (Registration for the Marketing of Construction Products)

Issue Date: 08 August 2013

China Building Material Test & Certification Group Co., Ltd.

QUALITY MANAGEMENT SYSTEM
CERTIFICATE OF CONFORMITY

Qingdao Boroito Glass Co., Ltd.

Address: No. 658, Jingshangshan Road, Huangdao Dist., Qingdao, China

is established and applied a quality management system in conformity with GB/T19001-2008/ISO 9001:2008

The scope covered by the system is: production and sales activities for patterned glass, also also for low iron glass, annealed glass, tempered glass, laminated glass, insulating glass, and safety glass.

Certificate Registration: 001102000008-2
Duration of Validity: 2013.07.08 - 2017.07.07

Director: [Signature]

Date: July 08, 2014

Shanghai Audit Center of Quality System

SPF Solarglas Solar Glass

Class: U1
U1

Commissioner: Qingdao Jinjing Co., LTD
No. 201, Jianshangshan North Road, Economic & Development Zone, Qingdao, China

Product: Jinjing Low Iron Solar Glass, Solartrier-S, 3.2 mm
Label: SPFG08-07-U1

Test Validity: 05.2015 – 04.2018

Result: Solar Glass of class U1

Transmission Factor: $F_{T,0.914} = 0.914$

IGM Weighting Factor: $F_{W,0.991} = 0.991$

Photodegradation Factor: $F_{D,1.001} = 1.001$

Degradation Factor: $F_{D,1.000} = 1.000$

Glass efficiency value: $F_{E,0.907} = 0.907$

Felix Flückiger
SPF Testing

VERIFICATION OF CPD COMPLIANCE

With EU Construction Products Directive 89/105/EEC

AC Auger Testing Certification

Certificate No. ACI0007010

Applicant: SHANDONG JINJING TRADE CO. LTD.
Address: BAOZHOU TOWN, HIGH-NEW TECHNOLOGY ZONE, ZIBO, SHANDONG, CHINA
Manufacturer: SHANDONG JINJING SCIENCE AND TECHNOLOGY STOCK CO. LTD.
Manufacturing Site: BAOZHOU TOWN, HIGH-NEW TECHNOLOGY ZONE, ZIBO, SHANDONG, CHINA

Product Description: FLOAT GLASS
Type and Model: THICKNESS RANGE: 2mm-25mm

Technical Construction File Reference No.: ST106/CS50-CPD

Conformity Assessed: EN 573-2:2004, EN 573-2:2004

Date of Issuance: Aug 12, 2014

Remarks: This Certificate is Only Valid For The Equipment And Configuration Described, And in Conformity With The Test Case Detailed Below.

Chief Assessor: [Signature]

Auger Certification & Testing Service LTD.
Auger Certification & Testing Service LTD.
SUNYI ROAD, 10-10 CIRCUS ROAD, 91, 10th FLOOR, HONG KONG



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List of Machineries & Equipments

Advanced PDLC Film Production Line



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List of Machineries & Equipments

Smart Glass Production Equipments



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List of Machineries & Equipments

Smart Film Processing Workshop



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Full Service Supplier

▶▶ Design

In-house R&D team

ODM and OEM Capacity

▶▶ Logistics

Regular European Shipments

Regular NA Shipments

Regular Southern Asia shipments

▶▶ Support

Worldwide Sales Network

Dedicated Engineering Support

24 hours On-line Service

▶▶ Manufacture

2-shift operation if necessary



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▶▶ Payment Terms

- ▶▶ 30% deposit T/T in advance and balance before shipment

▶▶ Quality Assurance

- ▶▶ 3 years after assembly in projects

▶▶ Package Standard

- ▶▶ 100% Plywood Pallets or Crates
Standard Export Package



▶▶ Our Products for Smart Glass

▶▶ Smart Glass Description

GLB Smart glass, also named as Privacy Glass or Switchable Transparent Glass (STG), is a high intelligent functional glass, which has a special characteristic of switching between clear and opaque by voltage control. Colorful smart Film is also available.



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Our Products for Smart Glass

Specification of Smart Film 01

BORUITO

BORUITO PDLC SMART FILM

Specification and Technical Data

PDLC膜 规格和技术参数表

Properties	Subjects	Status	Non Self-adhesive Smart Film			Self-adhesive Smart Film		
			White	Light Grey	Black	White	Light Grey	Black
Optical Properties 光学参数	Visible Light 可见光透光率	ON	>86%	>38%	>14%	>83%	>37%	>13%
		OFF	>6%	>6%	>6%	>6%	>6%	>6%
	Transmission 平行光透光率	ON	>80%	>37%	>14%	>78%	>36%	>13%
		OFF	<1%	<1%	<1%	<1%	<1%	<1%
	Haze 雾度	ON	<3.49%	<3.73%	<3.29%	<4.95%	<5.06%	<3.99%
		OFF	>97%	>97%	>97%	>97%	>97%	>97%
	Visual Angle 可视角度	ON	>150°	>150°	>150°	>150°	>150°	>150°
UV Blocking 紫外线阻隔率	ON/OFF	>99%	>99%	>99%	>99%	>99%	>99%	
Heat Resistance 隔热系数	R/RO	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	
Electrical Properties 电学参数	Operating Voltage 工作电压	ON	48V-65V AC	48V-65V AC	48V-65V AC	48V-65V AC	48V-65V AC	48V-65V AC
	Power Consumption PDLC 功耗	ON	<3W/m ²	<3W/m ²	<3W/m ²	<3W/m ²	<3W/m ²	<3W/m ²
	A.C. Transformer 变压器功耗	ON	50W/SET	50W/SET	50W/SET	50W/SET	50W/SET	50W/SET
	Response Time 响应时间	OFF-ON	<200ms	<200ms	<200ms	<200ms	<200ms	<200ms
		ON-OFF	<10ms	<10ms	<10ms	<10ms	<10ms	<10ms
Resistance uniformity 绝缘均性		≤ ±5%						

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Our Products for Smart Glass

Specification of Smart Film 02

BORUITO

BORUITO PDLC SMART FILM

Specification and Technical Data

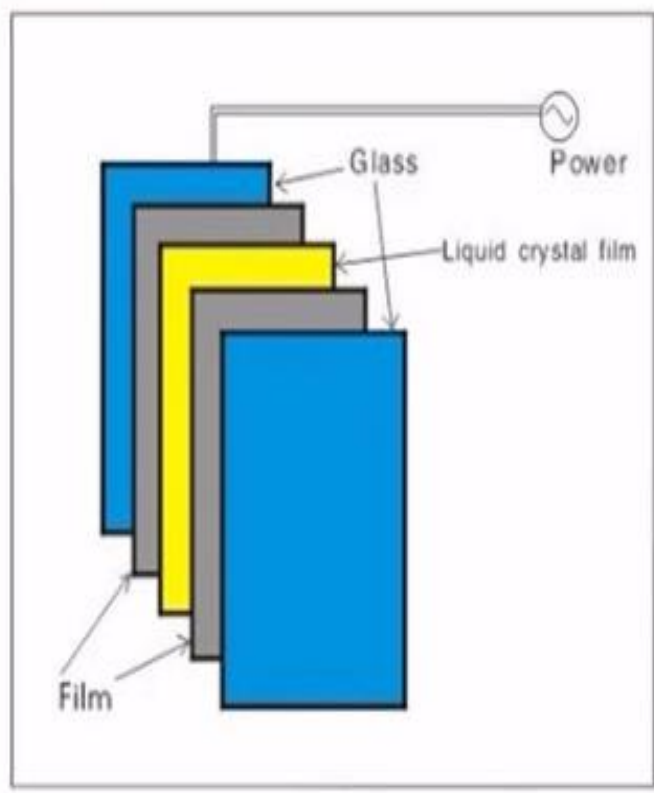
PDLC膜 规格和技术参数表

Properties	Subjects	Status	Non Self-adhesive Smart Film			Self-adhesive Smart Film			
			White	Light Grey	Black	White	Light Grey	Black	
Specification 物理参数	Thickness PDLC 厚度	0.35mm							
	Hardcoat hardness 表面强度	≥30H							
	Max Size 最大尺寸	1500mm*6000mm/1200mm*6000mm/1000mm*6000mm/1500mm*3000mm/1200mm*3000mm							
	Color PDLC 颜色	Milk white, Light grey,Black							
	Life Time 使用寿命	>80000hrs							
	ON/OFF Times 开关次数	>2000000times							
Enviromental Parameter 环境参数	Operating Temperature 工作温度	-10°~-55°							
	Storage Temperature 储存温度	-40°~-90°							
Energy Saving 节能参数	Excellent Thermal Performance 保暖效果	Indoor and outdoor temperature difference 2°C~5°C 室内外温差 2°C~5°C							

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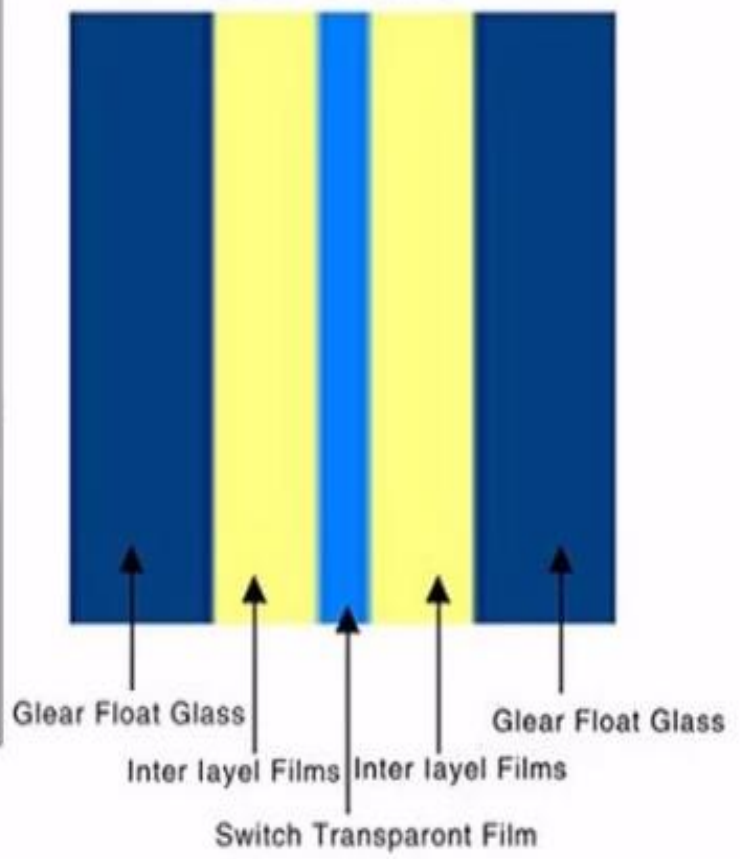
Our Products for Smart Glass

Composition Of Smart Glass



Glass+pvb film+PDLC Film+pvb film+Glass

STG Structure



▶▶ Our Products for Smart Glass

▶▶ Smart Glass Power System



Our Products for Smart Glass

GLB Smart Film Standards and PSU Data

BORUITO

Smart Film Grading Standard

Grade	Transmittance (only for white film)	Scratch-proof	Over-voltage Test (for piece electrode)	Fully Inspection (inch by inch)	Defective Spot Q'ty/sqm		Warranty (year)	
					Boruito (0.5 < φ ≤ 1.5mm)	Industry (0.5 < φ ≤ 3mm)	Boruito	Industry
S	≥86%	Yes	Yes	Yes	≤1	≤6	3	1
A	≥86%	Yes	No	Yes	≤2	≤6	2	1
B	≥83%	No	No	Sampling inspection	≤5	≤6	1	1

Remark:

1. Overvoltage test: Film passed this test of which defective spots caused by voltage won't come out during service.
2. Defective spot: Including white spot and breakdown spot.

47/60 TRANSFORMER An instruction manual

[[Product characteristics]]

47/60 power transformer is an isolation transformer, it special use for smart glass. That is a kind of power frequency transformer, which has the advantages of no flicker, high safety, good isolation, simple structure, convenient installation, etc. The power of this transformer from 30W-500W is available. Input voltage can be customized. The operating frequency is 50Hz/60Hz and the output voltage is selectable from AC48V-AC70V.

[[Electrical performance]]

Rated power : 30W-500W (Product label show the power)
 Input voltage : AC110V/220V 50Hz/60Hz
 Output voltage : AC48V-AC70V (Product label show the voltage)
 Output current : 0.1A-10A

[[Instructions for user]]

1. Please note that the input voltage and frequency must be in line with the nominal value of the transformer.
2. This product is for indoor use only.
3. Please don't cover the heat radiation hole of the product, avoiding to use in high temperature tide environment.

[[Attentions]]

Please pay attention to the use of power and current shall not exceed the label nominal value, otherwise it will lead to damage on product.

[[After-sale service]]

Non-human damage quality problems, warranty for one year.

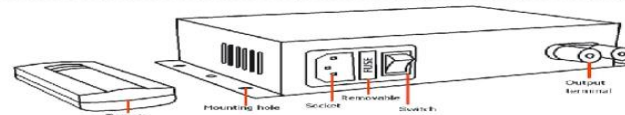
The warranty is not covered below: :

1. Damage caused by natural disaster such as flood, fire, etc.
2. Damage caused by water inflow, liquid inflow, collision, and other causes.
3. User do not in accordance to the instructions to use the product.
4. Artificial crash damage, disassemble products without permission or tear up product label.

[[Product selection]]

MODEL	POWER	INPUT	OUTPUT	SHELL
EEIO-C30/47	30W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C40/47	40W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C50/47	50W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C60/47	60W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C80/47	80W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C100/47	100W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C150/47	150W	110V/220V	48V/50V/60V/70V	47 Size
EEIO-C200/60	200W	110V/220V	48V/50V/60V/70V	60 Size
EEIO-C250/60	250W	110V/220V	48V/50V/60V/70V	60 Size
EEIO-C300/60	300W	110V/220V	48V/50V/60V/70V	60 Size
EEIO-C360/60	360W	110V/220V	48V/50V/60V/70V	60 Size
EEIO-C400/60	400W	110V/220V	48V/50V/60V/70V	60 Size
EEIO-C500/60	500W	110V/220V	48V/50V/60V/70V	60 Size

[[Installation Diagram]]



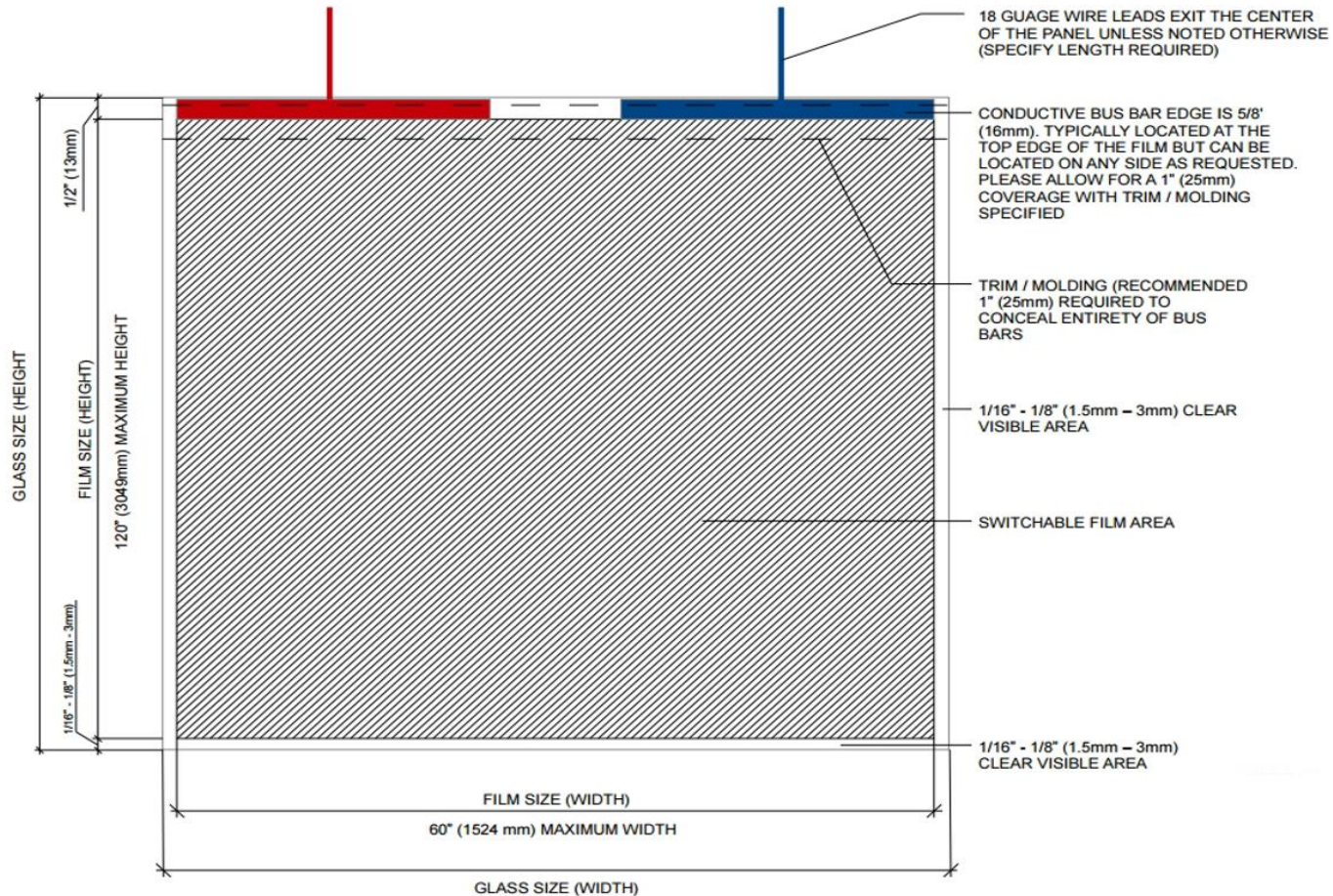
[[Product size]]

Model	Size	Pitch row	Aperture	Packing	QTY	Remote
47 Model	180*120*47	197*80	4*8	24.5*20.5*9	5pcs/ctn	Optional
60 Model	220*158*60	240*118	5*8	30*25*11.5	4pcs/ctn	Optional

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Our Products for Smart Glass

glb Smart Film Cutting Standards



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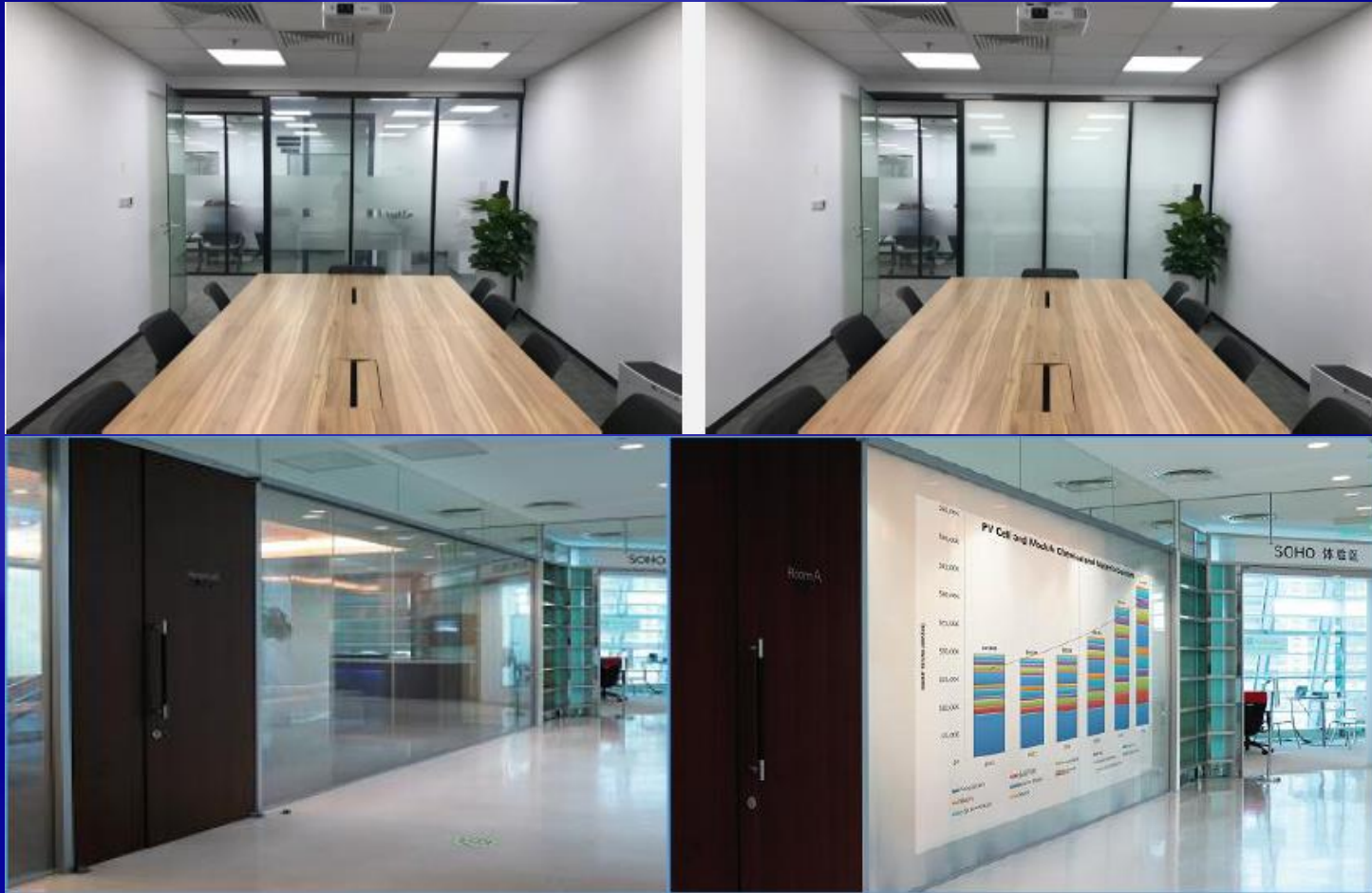
▶▶ Our Products for Smart Glass

▶▶ Application of Smart Glass 01



▶▶ Our Products for Smart Glass

▶▶ Application of Smart Glass 02



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▶▶ Our Products for Smart Glass

▶▶ Application of Smart Glass 03

Power on



Power off



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▶▶ Our Products for Smart Glass

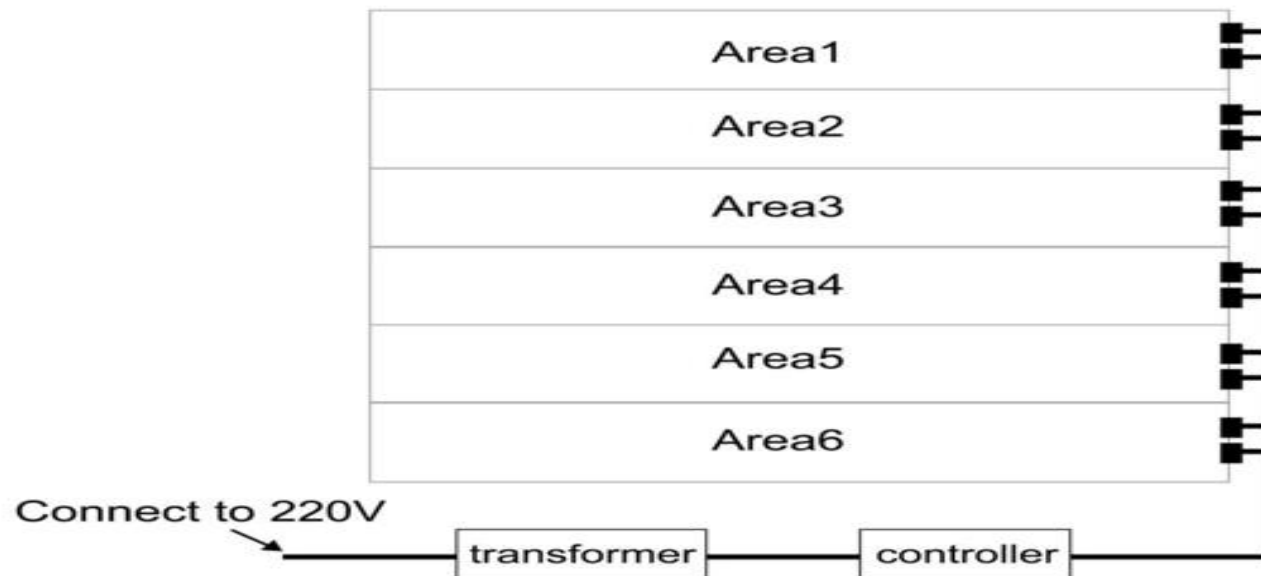
▶▶ Partitioned Smart Film and Glass (Smart Blinds)

WHAT IS PARTITIONED SMART GLASS?

What is partition? Partition means to reasonably divide the liquid crystal layer inside the switchable glass into several independent areas through technical means, so as to realize the separate control of each area, so as to display the pattern of transparent or opaque effect.

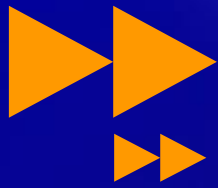
Partitioned smart glass, which is still a piece of glass, but it is difficult to see the separation of the internal liquid crystal layer when it is transparent or opaque. Partition, can make regular pattern such as square, diamond, trapezoid, also can make the irregular pattern such as character and picture.

The circuit diagram of partitioned smart glass



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Our Products for Smart Glass

Partitioned Smart Film and Glass (Smart Blinds)

Application of partitioned smart glass - Smart blinds glass

At present, our company provides two kinds of standard blinds width of 12cm and 8cm, the maximum number of the blinds is 128. The style divides horizontal bar, vertical bar and grid 3 kinds. Horizontal bars are normal, vertical bars and grids are customized. The image below shows the horizontal blinds effect.



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Our Products for Smart Glass

Partitioned Smart Film and Glass (Smart Blinds)

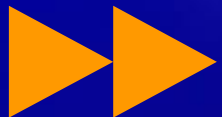
Application of partitioned smart glass - Customized pattern

Invariable partition effect is easy to make a person boring, but after making it partition control, in different time or scene can show different dynamic or static effect, let the whole space become more dynamic. Can be made into a variety of plants, animals, landscape, text or company LOGO and other patterns. Reasonable design, with different glass, so that the glass partition no longer invariable. It can also be made into various creative items, such as tables, billboards, lamps, etc.



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Our Products for Smart Glass



Partitioned Smart Film and Glass (Smart Blinds)

Application of partitioned smart glass - Customized pattern

The smart glass of customized pattern is special, from the choice of pattern to the control of the change mode, all need elaborate design. Each demander needs to make a different pattern, which requires the designer and demander to fully communicate and cooperate, so as to design a more perfect product.



transparent

State 1



State 2

State 3



State 4

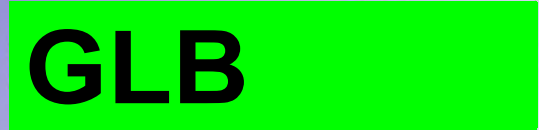
State 5



State 6

State 7

The partitioned smart glass application examples of our company



▶▶ Our Products for Smart Glass

▶▶ Smart Glass used in projection



正面投影



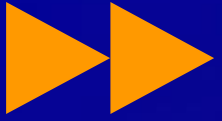
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▶▶ Our Products for Smart Glass

▶▶ Packaging and Shipping





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