

PHOTOELECTRIC GLASS

# LED Glass.

*Transparent media glass for façades and interiors.*

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A complete guide to the KAPHS LED Glass system — concept, manufacturing, applications, the full product range across two circuit technologies and signature project references.

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# Engineered light, embedded in glass.

KAPHS LED Glass is a premium photoelectric glass system that integrates high-density LED arrays between tempered glass plies. The result is a single architectural surface that performs as transparent media — letting daylight, sightlines and content occupy the same plane.

Developed for façades, curtain walls, canopies and statement interiors, the system pairs CCC-certified safety glass with energy-efficient LED technology, delivering luminance, longevity and weather resistance without compromising transparency.

# 2

CIRCUIT TECHNOLOGIES

# 8

PIXEL PITCHES

# 99%

TRANSPARENCY

# IP65

WEATHER PROTECTION

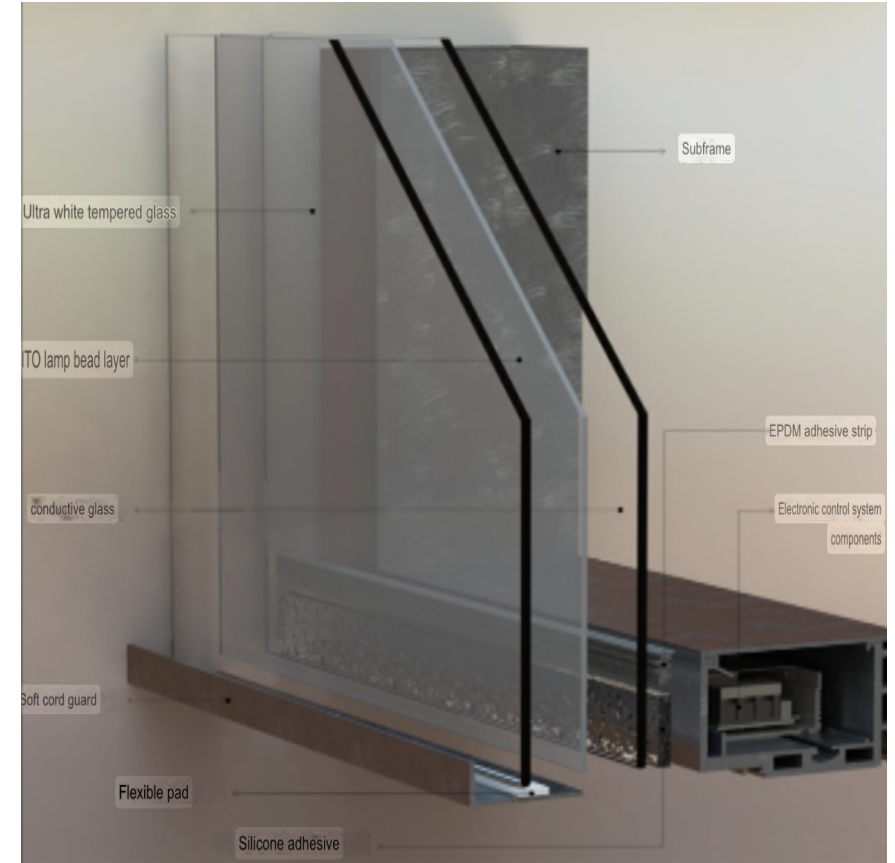
# A premium photoelectric glass solution.

## Architectural photoelectric glass

KAPHS LED Glass laminates a precision LED array between two tempered glass plies bonded by PVB film. Engineered for architectural performance, it carries CCC safety certification, IP65 weather protection, and offers transparency rates of up to 99% — preserving daylight, line of sight and façade aesthetics.

Two circuit technologies — Nano Copper-Clad and ITO Invisible — span pixel pitches from P8 to P50, allowing the system to scale from close-viewing interiors to large-format façade media installations.

Each panel is built to curtain-wall standards, supports curved geometry, and integrates seamlessly with existing structural systems for new builds or retrofit applications.



# Integrates with the glass you already specify.

## Compatible build-ups

KAPHS LED Glass is engineered to comply with safety glass specifications and laminate alongside the architectural glass families already used in modern envelopes. This makes the LED layer an addition to standard specifications — not a replacement.

Specify the panel as part of an insulating glass unit, behind a Low-E coating, or as a face within a structural laminate. The transparent media function is delivered without compromising thermal, solar or safety performance.

## Compatible glass types

### LOW-E GLASS

Low-emissivity coatings for solar / thermal control.

### INSULATED GLASS UNITS

Double-glazed and triple-glazed IGUs.

### TEMPERED SAFETY GLASS

CCC-certified toughened glass plies.

### LAMINATED ASSEMBLIES

Structural lamination with PVB or EVA interlayers.

# How LED Glass is made.

01

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## Glass cleaning

Tempered glass plies are cleaned to lamination standard and inspected for surface integrity.

02

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## Laser etching

Precision laser-etched conductive pathways are deposited on the inner glass surface.

03

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## LED placement

High-density LED chips are automatically mounted onto the conductive circuit at the specified pixel pitch.

04

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## Lamination

The assembly is bonded with PVB film under heat and pressure, vacuum-extracted and inspected.

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# Applications

Where LED Glass performs — façades, curtain walls, canopies, interiors and signage.

# Architectural Façades

## Architectural use

Integrated into ventilated façades and rainscreen systems, KAPHS LED Glass turns the building envelope into a programmable surface. Daylight and sightlines are preserved during the day; at night the façade becomes a dynamic media canvas — without the visual weight of a conventional LED screen.



# Curtain Walls

## Architectural use

Engineered to curtain-wall standards, LED Glass panels are dimensioned, framed and fixed using the same hardware as standard architectural glazing. Seamless integration delivers full-height media surfaces on commercial towers, retail podia and signature corporate façades.



# Canopies & Overpasses

## Architectural use

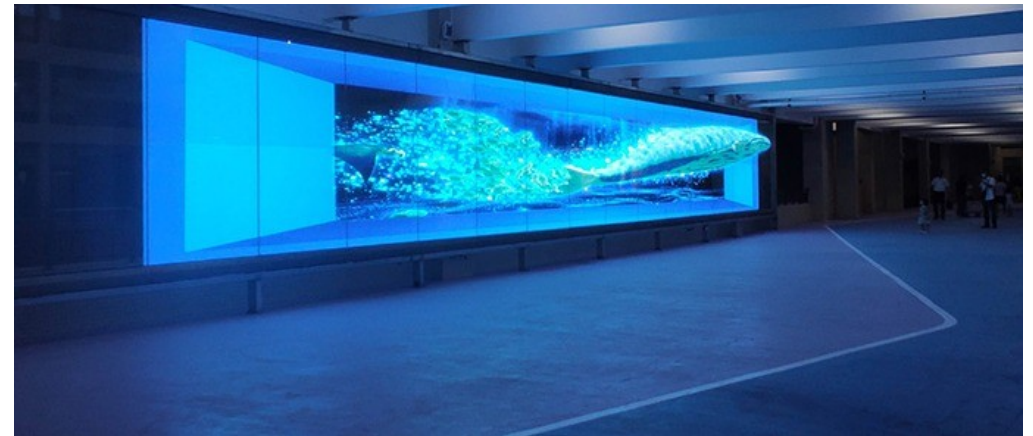
Outdoor-rated to IP65, KAPHS LED Glass is suited to overhead applications: pedestrian canopies, overpass railings, transit shelters and entrance soffits. Transparent during the day, illuminated at night, the panels deliver media and wayfinding from above without obstructing the structure.



# Railings & Balustrades

## Architectural use

Used in laminated glass balustrades, the LED interlayer adds programmable lighting and content to staircases, balconies and bridges. Structural lamination and CCC-certified tempered glass deliver code-compliant safety performance alongside the media function.



# Interiors & Atriums

## Architectural use

Inside lobbies, retail spaces and cultural buildings, LED Glass creates transparent feature surfaces — partitions, ceilings and feature walls that remain visually light while carrying brand content, artwork or live media. An alternative to opaque LED panels where transparency is a design priority.



# Where the panels are working today.

Six categories — thirty-plus industries

01

## Architectural Façades

Curtain walls, cladding and ventilated façades on commercial and civic buildings.

02

## Transport Hubs

High-speed rail stations, metro stations and airport terminals across the network.

03

## Civic & Cultural

Museums, libraries, hospitals and government buildings.

04

## Retail & Hospitality

Shopping centres, sales galleries, hotels, restaurants and auto showrooms.

05

## Bridges & Railings

Overpasses, pedestrian bridges, balustrades and waterfront infrastructure.

06

## Night-scene Lighting

City-scale lighting masterplans — landmark towers, plazas and waterfronts.

# Built for the building envelope.

## Engineered to architectural standards

Every KAPHS LED Glass panel is engineered as a curtain-wall component first and a display surface second. CCC-certified safety glass, IP65 surface protection and a service life of up to 80,000 hours give the system the durability profile required for permanent façade integration.

Ultra-low power consumption, full brightness adjustment from 0-100%, and a wide operating range of -40 °C to +80 °C make the panel viable across the full range of GCC climates — from open desert façades to fully glazed urban towers.

## Performance highlights

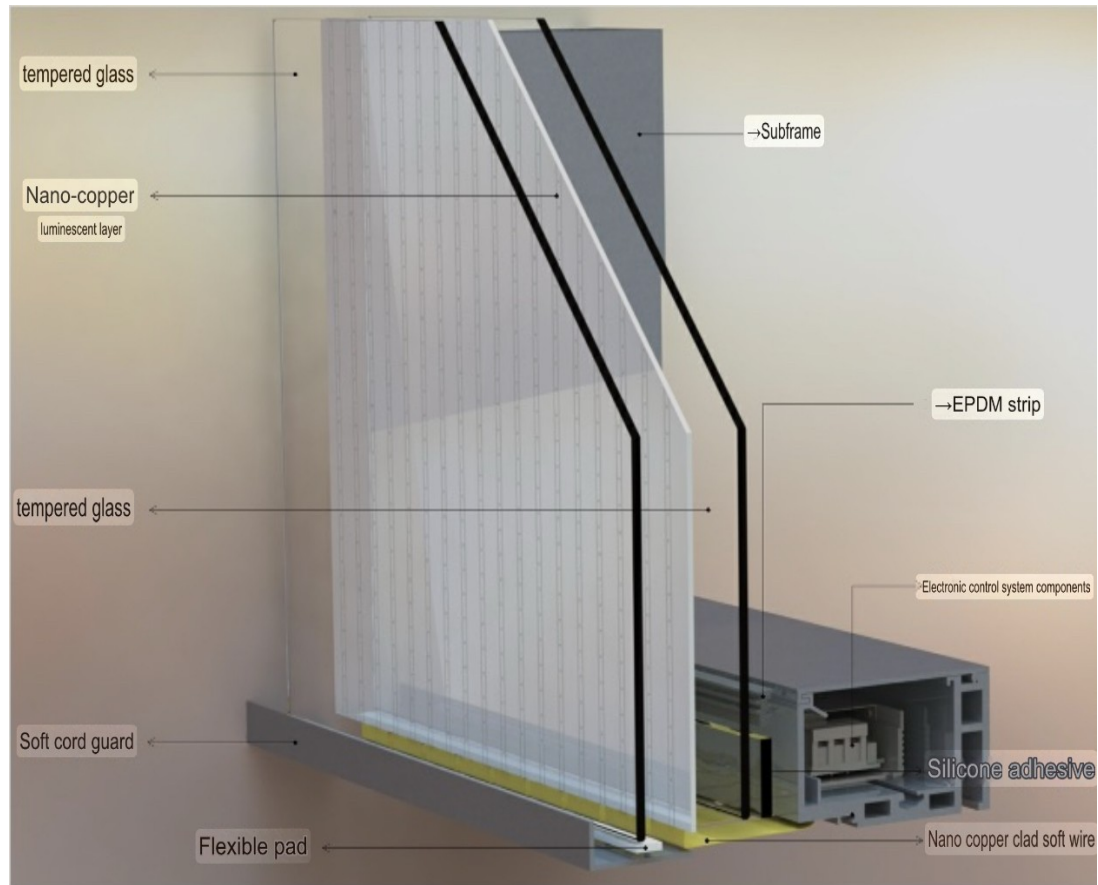
- IP65 surface protection — water, dust, lightning, corrosion resistant
- CCC-certified tempered safety glass, 99% inspection permeability
- Up to 99% transparency — daylight and sightlines preserved
- Service life up to 80,000 hours of continuous operation
- Operating range -40 °C to +80 °C, full auto brightness control

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# Product Range

Two circuit technologies — Nano Copper-Clad and ITO Invisible — across eight pixel pitches.

# Nano Copper-Clad Circuit



## About this range

The Nano Copper-Clad range uses a precision-etched conductive copper circuit with surface-mounted LED chips, laminated between tempered glass plies with 2.28 mm PVB. Engineered for high brightness and tight pixel pitches, the range is optimised for façade media, signage and large-format architectural displays where image density is critical.

Available in P8, P10, P16 and P20 — pixel densities from 2,500 to 15,625 px/m<sup>2</sup> and brightness up to 9,000 cd/m<sup>2</sup>.

# 4

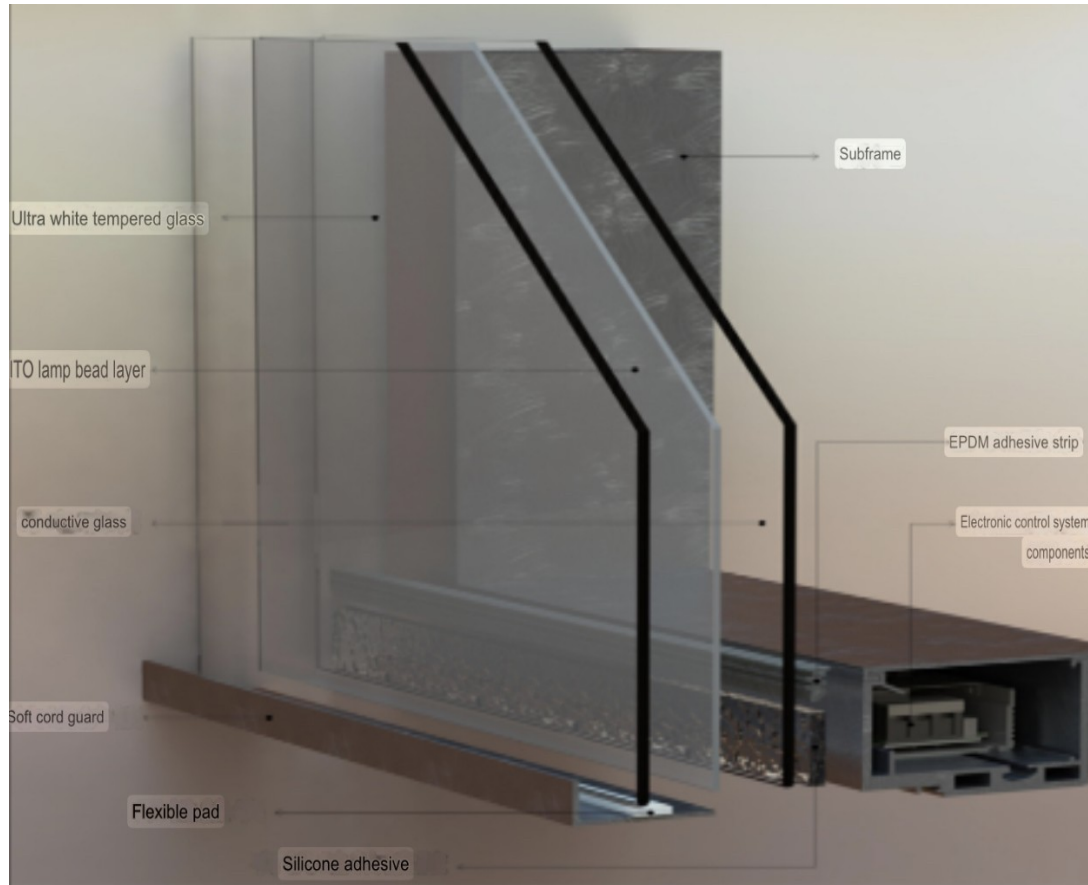
PIXEL PITCHES IN THIS RANGE

# Nano Copper-Clad — Specifications

## P8 — P10 — P16 — P20

Parameter	P8	P10	P16	P20
Pixel pitch (mm)	8	10	16	20
Pixel density (px/m <sup>2</sup> )	≥ 15,625	≥ 10,000	≥ 3,844	≥ 2,500
Brightness (cd/m <sup>2</sup> )	8,000–9,000	6,000–7,000	4,000–5,000	3,500–4,000
Peak power (W/m <sup>2</sup> )	950	600	250	150
Average power (W/m <sup>2</sup> )	500–600	200–400	100–180	80–120
Transmittance	>92%	>92%	>92%	>92%
Refresh rate (Hz)	3,840	3,840	3,840	3,840
Viewing angle	140°	140°	140°	140°
Colour temperature (K)	3,000–8,000 adjustable	—	—	—
Grayscale (bit)	16	16	16	16
Operating temp.	-40 °C to +80 °C	—	—	—
Protection rating	IP65 — water, dust, lightning, corrosion	—	—	—

# ITO Invisible Circuit



## About this range

The ITO Invisible Circuit range uses an Indium Tin Oxide conductive coating deposited on tempered glass — a wireless approach that eliminates visible circuitry and delivers transparency rates of up to 99%. With no physical wire to age or degrade, the panels offer long-term visual clarity and structural simplicity.

Available in P20, P30, P40 and P50 — optimised for large-format façade and curtain-wall installations where transparency is the priority.

4

PIXEL PITCHES IN THIS RANGE

# ITO Invisible Circuit — Specifications

P20 — P30 — P40 — P50

Parameter	P20	P30	P40	P50
Pixel pitch (mm)	20	30	40	50
Pixel density (px/m <sup>2</sup> )	≥ 2,500	≥ 1,089	≥ 625	≥ 400
Brightness (cd/m <sup>2</sup> )	1,000–1,500	350–600	200–450	250–300
Peak power (W/m <sup>2</sup> )	230	100	60	40
Average power (W/m <sup>2</sup> )	110	50	30	20
Transmittance	>92% (up to 99%)	—	—	—
Refresh rate (Hz)	3,840	3,840	3,840	3,840
Viewing angle	140°	140°	140°	140°
Display colour	16.7 million	—	—	—
Grayscale (bit)	16	16	16	16
Operating temp.	-40 °C to +80 °C	—	—	—
Protection rating	IP65 — water, dust, lightning, corrosion	—	—	—

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# Project References

Where KAPHS LED Glass has been installed at scale — across China and beyond.

# Beijing CBD Central Square

Beijing, China / 1,500 m<sup>2</sup>

Lit on 18 October 2024 at the opening of the Beijing Chaoyang International Lighting Festival, this 1,500 m<sup>2</sup> LED glass installation set a new record for the largest photoelectric glass screen in Beijing — anchoring the city's central business district with a programmable, transparent media surface.



# The Grand Canal Museum

Yangzhou, China / Cultural landmark

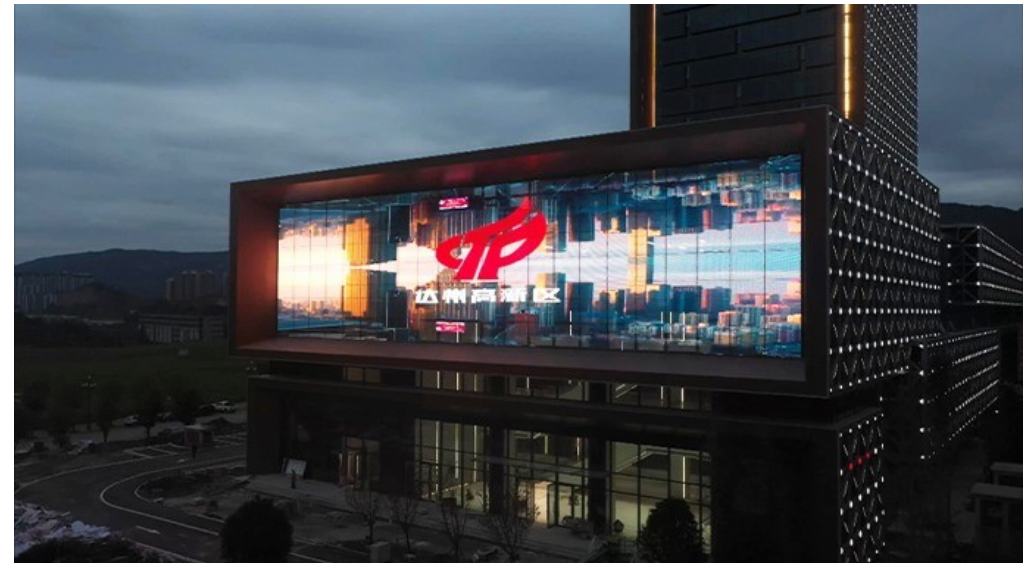
Part of the National Cultural Park programme, the Grand Canal Museum uses the full-colour dynamic ITO Invisible range — up to 99% transparency. By day, the glazing reads as conventional architectural glass; by night, the façade displays curated content, advertisements and museum signage.



# Dazhou Big Data Base

Dazhou, China / Digital infrastructure

Aligned with the national green-computing strategy, the Dazhou Big Data Base integrates LED Glass into the facility envelope — a low-power, high-transparency surface that turns the technical building into a branded, communicative volume without compromising daylight or interior function.



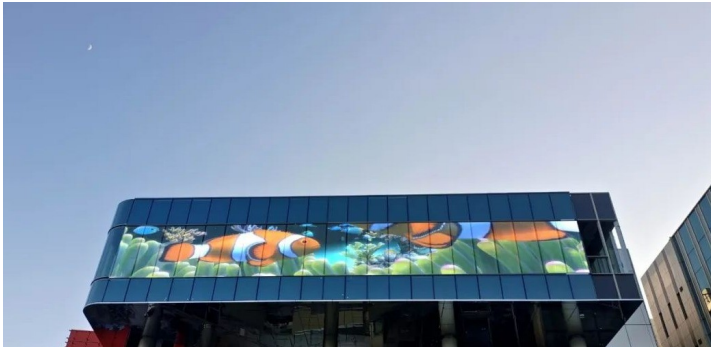
# Science and Innovation Center

China / Civic & research

A flagship civic-research facility using LED Glass across multiple façade elevations. The panels carry institutional content, wayfinding and programmed lighting while maintaining the architectural transparency the brief required.



# Selected installations.



**Shanghai Pingjin Center**

Shanghai, China



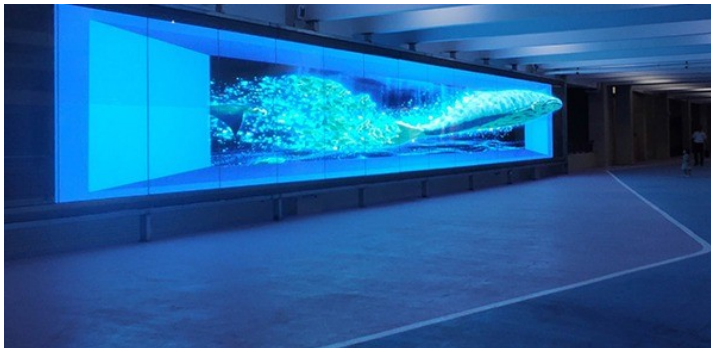
**Shanghai Zhenru Huanyu City**

Shanghai, China



**Changzhou City Hospitals**

Changzhou, China



**Guangzhou Primary School**

Guangzhou, China



**Jiangnan River**

Chengdu, China



**Xian Future AI Computing Centre**

Xian, China

# A wider portfolio of installations.

Selected projects across façades, transit, retail and civic

## FAÇADES & CURTAIN WALLS

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- Shanghai Greenland Bund Center — first full-colour P10 in Shanghai
- Jindi Smart CloudMinds Robot Industry Base
- New World Future City — Wuhan Military Games
- Jinmao Sales Center
- Intime Department Store
- Xuhui Sales Center

## BRIDGES & RAILINGS

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- Hangzhou Asian Games Organising Committee
- Asian Games Wulin Square
- Shanghai Greenland Bund Center bridge
- Hongqiao Longhu Celestial Street
- Zhuji Pearl Museum
- Zhoupu Yongle Life Square

## TRANSIT & CIVIC

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- Suzhou High-Speed North Railway Station — Cube
- Lishui Longquan High-Speed Rail Station
- Xian Jiahui Block
- Fuzhou Minjiang Star
- Shanghai Starry Sky Post
- Huangpu River Cube

# A vertically integrated manufacturing partner.

## KAPHS × LIGHTTECH — production partnership

KAPHS LED Glass is engineered and manufactured in partnership with LIGHTTECH, a National High-Tech Enterprise founded in 2016 with a vertically integrated facility spanning tempered glass, conductive circuit, automated LED placement and PVB lamination.

The partnership combines KAPHS's regional engineering, project delivery and supply across the GCC with LIGHTTECH's scale manufacturing and continuous R&D in photoelectric glass — backed by 60+ patents and 2,000+ days of independent development.

## Footprint

### KUNSHAN

Production & R&D — fully automated factory

### SHANGHAI

Marketing & engineering headquarters

### BUSAN

Chip & driver R&D office, South Korea

### DUBAI

KAPHS Middle East — regional delivery

### MONTREUX

KAPHS S.A. — Swiss head office

# Built to certified standards.

## Compliance & engineering

KAPHS LED Glass is manufactured under a vertically integrated quality system covering tempered glass, conductive circuit, LED placement and PVB lamination. Each panel is engineered to perform as both a curtain-wall component and a display surface — and certified accordingly.

### CCC

Tempered safety glass — China Compulsory Certification.

### IP65

Surface protection rating — water, dust, lightning, corrosion.

### CNAS

99% inspection permeability, 85% light transmittance verified.

### ISO

Process and product certification across the manufacturing chain.

### R&D

60+ patents covering circuit, lamination and mounting technology.

### LIFE

Service life of up to 80,000 hours of continuous operation.

# Let's build with light.

Specify, sample and engineer KAPHS LED Glass for your next façade, curtain wall or interior media project.

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