INVISIO

STRUCTURAL GLAZING SYSTEM

architect's **first choice**

IQ

IQ Glass have been the UK's leaders in architectural glazing for many years. Our broad product range of architectural glazing products ensure that we can offer a full turnkey service for architectural design projects. Our completed projects have been recognised by some of the world's most exclusive awards such as the RIBA and our work is regularly featured in national TV and editorial publications.

INVISIO

The Invisio Structural Glazing System was designed in house by the expert technical team at IQ. It was born from our expertise in the design and installation of structural glazing. Knowing the requirements of specifiers we set out to design a revolutionary new approach to structural glazing, ensuring impressive thermal performance, frameless design and ease of installation and replacement.

" designed for architects **by the experts"**

it's all in the **details**

The Invisio structural glazing system has been designed to encompass all the requirements of a modern structural glass installation; high performance, large glass sizes, frameless design and ease of installation.

A Frameless Finish

The beauty of structural glazing is its frameless finish. The Invisio system continues that impressive glazing finish with all fixings able to be hidden.

Thermally Broken

All INV fixings are fully thermally broken. This innovative design ensures that this structural glazing system achieves high levels of thermal insulation.

Fully Tested

Specifiers can achieve peace of mind thanks to the extensive testing that the Invisio system has undergone. This includes thermal and wind load testing.

Flexible Possibilities

Thanks to the highly technical thermal break technology and high specification glass used the system achieves exceptional levels of performance.

Ease of Installation

The base INV fixing has a removeable side making the installation and removal of large, heavy structural glass units more efficient.

thermally **broken**

The Invisio is **the UK's only** fully tested, thermally broken structural glazing system.

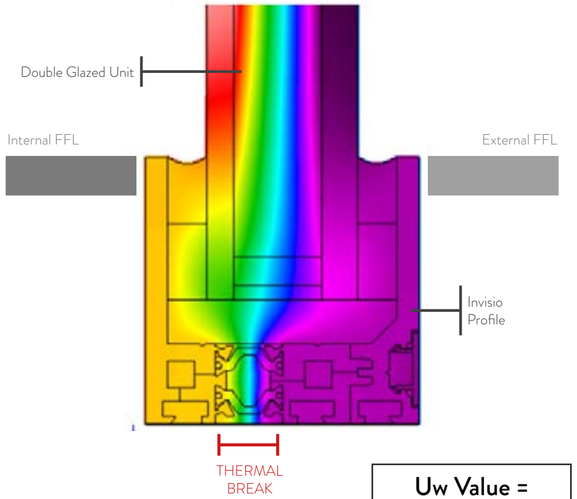
The system has been fully tested under multiple scenarios for thermal performance achieving a Uw value of 1.1-1.2 W/m²K in all cases. This impressive level of thermal performance was achieved using a double glazed unit with Ug value 1.1 W/m²K.

The Thermal Break
The integrated thermal break within the Invisio profile acts as a barrier for thermal transmittance providing an impressive Uf value. It reduces heat loss through these frameless glass installations and improves the overall thermal performance.

The polyamide thermal break ensures there is no thermal bridging within the Invisio fixing system, making the specification and detailing of bespoke frameless glazing easier for architects.

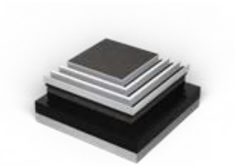
Insulated Glass Units
By pairing the thermally broken fixing system with highly insulated glass units you can achieve a frameless and complex glass installation with an expectational overall Uw value.

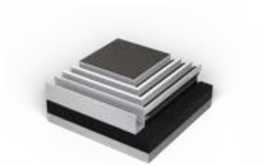
The Invisio Thermal Model

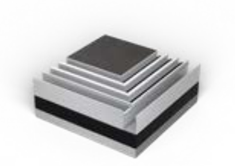


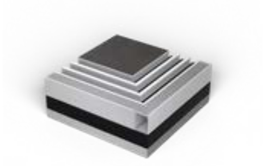
Uw Value = 1.1 to 1.2 W/m²K

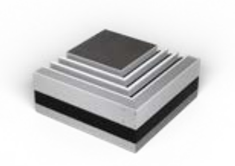
From Report WIL 427028 Thermal Performance of Windows, Doors & Shutters - Calculation of Thermal Transmittance, BS EN ISO 10077-1:2017

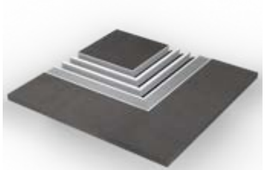












integrated **drainage**

IQ have engineered a bespoke drainage channel for the Invisio system, sitting in front of the structural glass installations.

Surface Water Drainage

Drain 61 is perfect for preventing any water pooling, keeping the glass installation clear and maintaining the most minimal design. The advanced drainage solution should be used for surface water drainage, enhancing the functionaity of any Invisio application.

Maximum Length

The maxmim length per section is 6.5 metres and multiple sections can be used together for larger installations.

Colour Finishes

The channel is a black colour and has been anodised for a high quality finish. It can be specified in a silver anodised finish for a subtle exterior finish.

glass **specification**

The standard U profile Invisio fixing section is designed to hold an insulated glass unit with a maximum thickness of 41.5mm. This gives us a large degree of flexibility when it comes to the glass specification for this system.

Typical Glass Specification
Invisio structural glazing is specified with a double glazed unit with low e coating and argon gas filling as standard. The exact glass composition will depend on the wind load of the project and the size of the glass elevation.

Coated Glass Options
Additional glass coatings such as Solar Control Coatings can be integrated into the Invisio glass spec. We recommend Solar Control Glass for any south facing elevation or roof glazing.

Laminated Glass Options
The invisio section has been designed to accommodate laminated glass units which allows for the inclusion of high performance laminates such as high strengthening interlayers, coloured interlayers, acoustic dampening interlayers, security interlayers, bird protection glass and more.

fully tested

Thermal Insulation Testing

Various scenarios were tested resulting in a Uw value of 1.1-1.2 W/m²K.

Wind Load Testing

All tested scenarios were tested at two wind loads; 0.8 kN and 1.6 kN. Maximum recommended sizes were determined at both loads to ensure a minimal deflection (1/175).

Scenarios

Various 'scenarios' were tested to give a wide variety of example installations. Different scenarios can be integrated to form larger, more complicated structural glass installations.

SC1	four edge support single pane
SC2	four edge supported multiple pane with silicone jointed glass
SC3	single pane base fixed with silicone joints at head and jambs
SC4	single pane fixed at head and base with silicone joints at jambs
SC5	multiple pane fixed at head and base with silicone joints between glass panels, and at the jambs.
SC6	two pane fixed at head and base with silicone joints between glass panels, and at the jambs.
SC7	three sided glass box with glass roof, all glass fixed at base and to building structure, silicone jointed glass to glass connections on all other connections
RL/FL	single or multi pane rooflight or floorlight

Extremely complicated glass structures can be created using the Invisio fixing system. The tested scenarios were designed to give a wide range of examples of how the structural glazing would behave under different situations.

Template NBS Documents

We have a collection of template NBS documents covering various applications of Invisio. These can be easily dropped into your larger NBS.

Proven Performance

Thermal performance and wind load capabilities have all been predetermined which makes performance modelling and structural design a lot easier.

Typical Details

Thanks to the systemised approach to structural glazing, it is now possible to provide typical or example CAD details before an order is placed for the glazing.

Trusted Glazier

The Invisio system was designed in house by the team at IQ. It is only available from us meaning our expert technicians install every installation.

ease of **specification**

Previously, when architects wanted to include frameless structural glazing on a project specification was difficult due to the bespoke nature of such installations.

Architects relied on glaziers to provide bespoke adhoc solutions using angles and mastic. Thermal performance values had to be estimated. Wind load capabilities had to be determinted on past experience.

The Invisio system removes all of those issues with specifying structural glazing. Architects still receive the same frameless and seamless glass installation but with proven test results in a systematised format.

Frameless Windows

Sometimes known as 'Picture Windows'. Frameless structural glass windows create a frameless 'punch' through a solid wall structure, creating a frameless picture of the external vista. They are fixed on all four sides and consist of one insulated structural glass unit. As with all Invisio installations, the fixing details are designed to be hidden by the building finishes, leaving a frameless window design.

Tested Scenario	SC1
Wind Load 0.8 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	6.9m
Wind Load 1.6 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	3.45m
Typical Uw Value	1.1 W/m^{2}K *

Glass Walls

A continuous elevation of frameless structural glass units. The glass is framelessly connected to the building structure at head, base and jambs using the Invisio thermally broken fixing system. Each frameless unit is framelessly connected and joined together using specialist silicone joints. The result is a large glass elevation with no visible framing or fixings.

Tested Scenario	SC2 / SC5 / SC6
Wind Load 0.8 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	12.71m
Wind Load 1.6 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	6.88m
Typical Uw Value	1.2 W/m^{2}K *

Oriel Windows

A popular structural glass window option, bringing in multi directional light and creating a light filled seating area internally. The frameless structural glass units are fixed to the base of the window structure and back to the building with the thermally broken Invisio section. All other glass to glass connections are frameless. Using high specification strengthening interlayers within the vertical glazing ensures a minimal finish.

Tested Scenario	SC3 / SC7
Wind Load 0.8 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	5.74m
Wind Load 1.6 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	2.87m
Typical Uw Value	1.2 W/m²K *

Glass Links

Structural glass links are the perfect way to connect a new extension to an existing building. The structural glass units are connected at the base and to the building structures using the Invisio thermally broken section. All other glass connections are frameless using structural silicone. Strengthening interlayers allow a frameless roof to wall connection.

Tested Scenario	SC3 / SC7
Wind Load 0.8 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	5.74m
Wind Load 1.6 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	2.87m
Typical Uw Value	1.2 W/m²K *

Glass Extensions

Glass Box Extensions can create a completely clear, frameless extension space with no metal supports visible. By using frameless pieces of strong structural glass with laminated glass beams and fins the entire construction can be completely glass. All building connections are created using the Invisio thermally broken section. That paired with highly insulating glass creates a high performing extension.

Tested Scenario	SC7 / SC6 / SC5 / SC4
Typical Uw Value	1.2 W/m²K *

Eaves Windows

Frameless 'Up and Over' glass structures following the line of the roof can be completely frameless and high performing thanks to the Invisio system. Using specialised strengthening interlayers within the vertical glass these clear panels of glass can effectively carry the load of the above glass unit, creating a glass boxed rooflight with no visible supports or frame. The glass is then connected to the structure using the Invisio fixing system.

Tested Scenario	SC3
Wind Load 0.8 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	5.74m
Wind Load 1.6 kN	
Max Tested Opening Height	5m
Max Tested Opening Width	2.87m
Typical Uw Value	1.2 W/m²K *

Frameless Rooflights

Frameless panes of structural glass can be used to create minimalistic rooflights within solid roof structures. Our Invisio thermally broken rooflight section is used to fix the frameless glass units to a typical upstand offering a frameless finish from inside and out.

Tested Scenario	RL/FL
Max Tested Opening	1.5m x 3m
Typical Uw Value	1.2 W/m²K *

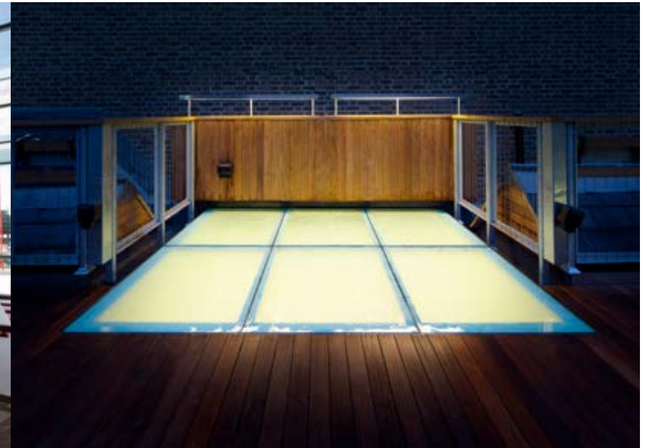
Strip Rooflights

These long runs of frameless structural glass are connected and sealed together with simple silicone joints between the panes, creating long and frameless glass rooflight constructions. Narrow rooflight designs are perfect for bringing in concentrations of light into extensions or to use as a long rooflight over a hallway design.

Tested Scenario	RL/FL
Max Span without Supports	approx 1.3m
Max Span with Internal Supports	N/A
Typical Uw Value	1.2 W/m2K *

Glass Roofs

The Invisio fixing system can be utilised in roofing areas to create a fully glazed roof to any space or room. These overhead elements of structural glazing will allow the maximum amount of natural light to enter a space and with the full thermal break of the Invisio system, can achieve high levels of thermal insulation.



Tested Scenario	RL/FL
Typical Uw Value	1.2 W/m²K *

Glass Floors

Structural glass floors are extremely strong and durable elements of frameless glazing. These walk on glazing installations are fixed to the building structure using the unique Invisio thermally broken system. The glass can be finished with a wide range of anti-slip surface finishes . Larger glass floors can be created using multiple panes of glass supported by slim steel or glass beam sections.

Tested Scenario	RL/FL
Max Pedestrian Load	1.83 KN/m²
Typical Uw Value	1.2 W/m²K *

Gable End Windows

Invisio structural glazing can be used to create gable end windows, utilising frameless window structures. Gable end windows inject a modern, dynamic twist to the external face of a building whilst introducing an abundance of natural light into previously dark loft spaces. The fully thermally broken system creates comfortable living temperatures for loft environments, all year round.

Tested Scenario	SC2
Typical Uw Value	1.1 W/m^{2}K *

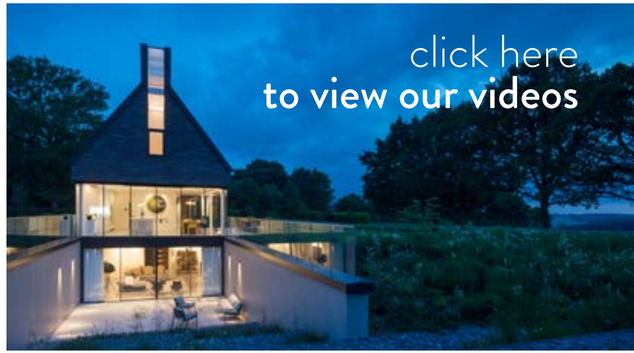
Side Infill Extensions

Side infill extensions are designed to expand the useable space within a home. Using the Invisio system to create these bright spaces, size and shape is unrestricted due to the nature of the system. These installations are created on a completely bespoke basis, ensuring any specific design requirements can be met. The glazing can be specified with a range of technical glazing solutions to enhance functionality.

Tested Scenario	SC7 / SC6 / SC5 / SC4
Typical Uw Value	1.2 W/m^{2}K *

see it
in person

The Courtyard Showroom in Amersham showcases the very best options in modern architectural glazing. The Invisio system takes pride of place in the spacious outdoor area as well as in various locations throughout the building. Book an appointment to visit and experience the latest advances in architectural glazing design.



the IQ experience

When you place an order for your structural glazing with IQ you don't just get a beautifully designed system with exceptional performance. You will also gain access to the vast experience of IQ and our extensive services, all designed to ensure that your architectural glazing project is a complete success.

Design Detailing
We have an in house team of detailed CAD engineers who detail each glazing installation to ensure a minimal finish and cohesive design. Each installation of Invisio is designed with your project requirements and building finishes in mind.

Expert Contract Management
Every architectural glazing project with IQ is overseen by a highly experienced Project Manager. They are your sole source of contact throughout the glazing installation. With many years experience they can help advise on site logistics, performance requirements and installation techniques.

In House Installation Teams
The installation of architectural glazing is arguably one of the most important steps in its completion. Our in house team of glass technicians install these high specification glazing products every day, all year around, meaning that they are the most experienced glass handlers in the UK.

Built in Logistics
Fully stocked vans, integrated factory services, on van glass lifting equipment, dedicated mastic and survey teams... We have built a system that caters for every possible site scenario to ensure we are prepared and ready to overcome any site difficulty we face.

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