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|----------|------|
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| (31.4) | Xh4 |

FXi

CASEMENT WINDOW SUITE

A Fresh Approach to Window Design.
Contemporary window solutions for sustainable
buildings. Outstanding design flexibility, robust
performance and innovative detailing for the
most demanding glazing specifications.



Ref: CB/FX/V003Oct09

Technal is a Hydro brand

Technal's continuous development programme may result in product modifications.
Consequently, Technal reserves the right to vary the specifications shown in this literature without notice.



FXi

Innovations in Window Technology



Sustainability, performance and aesthetics are the three principal considerations for specifiers to address in their selection of window systems. Developed as a fully integrated suite, the FXi commercial aluminium window range is Technal's response to the most demanding of specifications.

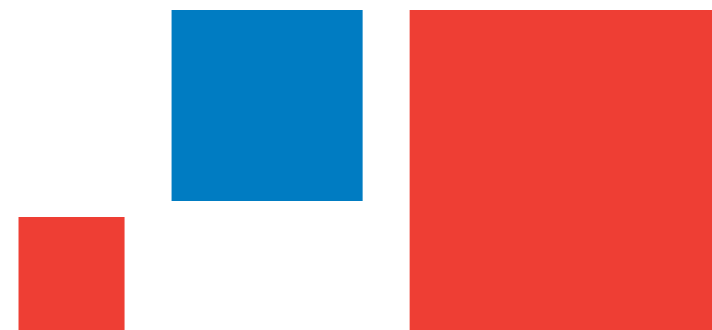
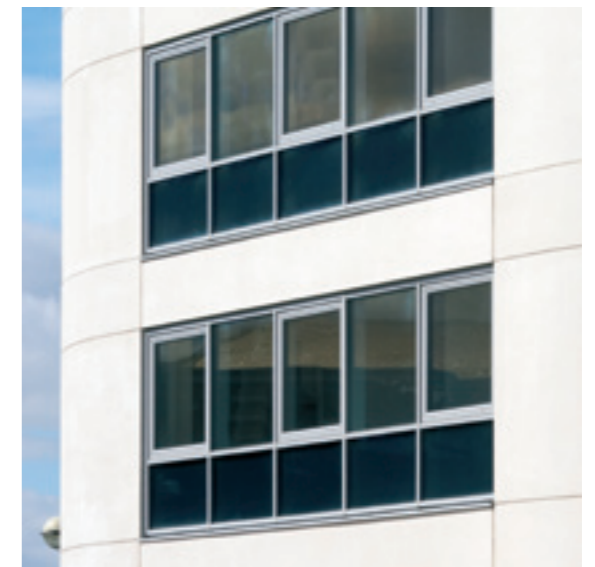
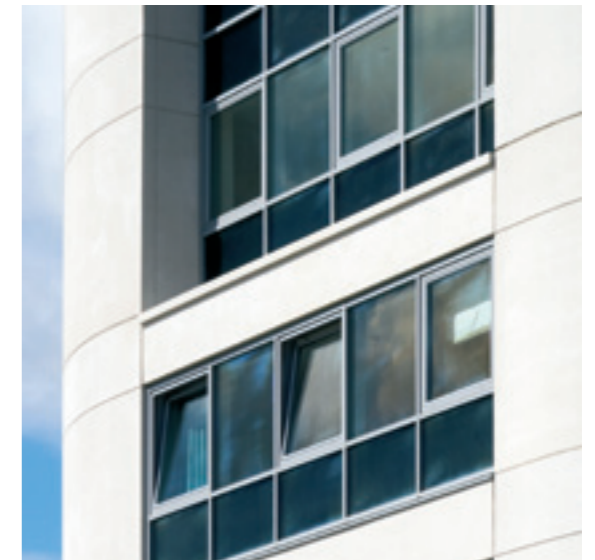
The suite combines proven technology with a fresh approach to window design. The result is a range of three module sizes, which offer specifiers the unrivalled flexibility to deliver enhanced thermal performance to meet or exceed current Building Regulations.

Quality components, advanced manufacturing techniques, innovative detailing and intelligent design combine to ensure the windows fulfil the requirements for strength, visual appeal, long-term durability, weather resistance, ease of fabrication and accurate installation.

Superior Thermal Performance

The FXi suite is Technal's most technically advanced window suite to date. It has been developed to help deliver more sustainable buildings and minimise impact on the environment.

With the right combination of frame and glazing, the requirements outlined in the current Building Regulations for England and Wales, Scotland and Ireland, can be met or exceeded across the FXi suite, with no compromise on quality, aesthetics, design flexibility or long-term durability.



FXi

Achieving
Excellence in
Window Design



Key Features and Innovations

- **Narrow sight lines.** Technically advanced framing systems with slim sight lines
- **Meeting individual project requirements.** FXi is available in three module sizes – 46mm, 52mm and 65mm
- **Thermal efficiency.** A highly efficient flush polyamide thermal break – 8mm for FXi46, 9mm for FXi52 and 19mm for FXi65 – for excellent thermal performance and improved aesthetics
- **Architectural flexibility.** The systems can be used for punched hole, composite and ribbon window applications, and both new build and refurbishment schemes
- **Efficient drainage.** The framing system is fully drained and pressure equalised to minimise the build up of water and for excellent weather resistance
- **Enhanced aesthetics.** Flush EPDM gaskets for weatherproofing and glazing guarantee quality and further enhance the appearance of the windows
- **Wide choice of configurations.** The range includes fixed lights, top, side and bottom hung, pivot, tilt/turn and tilt/slide
- **Single or dual colours.** There is the option to use a different colour internally and externally for further design flexibility
- **Easier glazing.** The systems can be dry glazed from the inside using clip-in beads for ease of fabrication and faster glass replacement
- **Natural ventilation.** Trickle ventilation to Building Regulations requirements is offered as an option
- **Full system compatibility.** The windows in the FXi suite can be inserted into Technal's MX curtain walling and MODAL low rise façade system, to naturally ventilate the building and offer additional aesthetic options
- **Wide selection of window furniture.** Options include espagnolette, pivot and cockspur handles, and Technal's ergonomically designed tilt/turn handle, which can be colour matched to project requirements
- **Security.** The FXi range can be manufactured to meet BS 7950 requirements for security.





Configuration Options

| | | FXi46 | FXi52 | FXi65 |
|----------|----------------------------|-------|-------|-------|
| | Fixed light | ■ | ■ | ■ |
| Open out | Top/side hung (butt hinge) | ■ | ■ | ■ |
| | Projected top/side hung | ■ | ■ | ■ |
| Open in | Bottom hung | ■ | ■ | ■ |
| | Side hung | ■ | ■ | ■ |
| | Tilt and turn | ■ | ■ | ■ |
| | Tilt and slide | | | ■ |
| Pivot | Horizontal | ■ | | |
| | Vertical | ■ | | |
| Door | Balcony door open in | | ■ | |
| | Balcony door open out | | ■ | |
| MX | Curtain wall insert | ■ | ■ | ■ |

Security

The FXi suite has a number of reassuring security features:

- Opening lights, which are internally glazed
- Composite fixed lights with a reverse rebate to prevent removal of the glass from the outside
- Two-point or multi-point espagnolette locking supplied for the open-out configurations
- Four to eight-point locking for the tilt/turn window system.



Construction

- **Robust construction.** Both fixed and opening lights in the FXi range are constructed using strong, flush mitre joints with chevrons and crimped or pin corner cleats for high quality construction to ensure a clean, hardwearing finish.
- **Facilitating fabrication.** The mullions and transoms are butt jointed with screw grooves or spigots and an anti-rotation device ensures correct alignment.



Fabrication and Installation

The FXi suite uses common tooling, high quality components and accessories, and advanced manufacturing techniques for further assurance of fabrication quality, accurate installation and continued performance to specification.



Thermal Performance

Examples of U values achievable for given sizes and configurations within the FXi suite. These are based on independent hot-box tests. Technal's technical department can advise on values for specific situations.

| | | U Value Glass (centre pane) | | | | | | | | | | | |
|-------|-------------|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | | 1.7 | | | | 1.5 | | | | 1.2 | | | |
| | | S1 | S2 | S3 | S4 | S1 | S2 | S3 | S4 | S1 | S2 | S3 | S4 |
| FXi46 | Fixed Light | 2.40 | 2.20 | 2.10 | 2.10 | 2.30 | 2.00 | 2.00 | 2.00 | 2.10 | 1.80 | 1.80 | 1.70 |
| | Open In | 2.70 | 2.40 | 2.30 | 2.30 | 2.60 | 2.20 | 2.20 | 2.20 | 2.40 | 2.00 | 2.00 | 2.00 |
| | Open Out | 2.80 | 2.50 | 2.40 | 2.40 | 2.70 | 2.30 | 2.20 | 2.20 | 2.60 | 2.10 | 2.10 | 2.00 |
| FXi52 | Fixed Light | 2.30 | 2.10 | 2.10 | 2.10 | 2.20 | 2.00 | 2.00 | 1.90 | 2.00 | 1.80 | 1.70 | 1.70 |
| | Open In | 2.60 | 2.30 | 2.30 | 2.30 | 2.50 | 2.20 | 2.10 | 2.10 | 2.40 | 2.00 | 1.90 | 1.90 |
| | Open Out | 2.70 | 2.40 | 2.30 | 2.30 | 2.60 | 2.30 | 2.20 | 2.20 | 2.50 | 2.10 | 2.00 | 2.00 |
| FXi65 | Fixed Light | 2.10 | 2.00 | 2.00 | 2.00 | 2.00 | 1.80 | 1.80 | 1.80 | 1.90 | 1.60 | 1.60 | 1.60 |
| | Open In | 2.30 | 2.10 | 2.10 | 2.10 | 2.20 | 2.00 | 1.90 | 1.90 | 2.00 | 1.80 | 1.70 | 1.70 |
| | Open Out | 2.20 | 2.10 | 2.00 | 2.00 | 2.10 | 1.90 | 1.90 | 2.00 | 1.90 | 1.70 | 1.70 | 1.70 |

■ ≤ 2.2 ■ ≤ 2.3 ■ ≤ 2.4 ■ ≤ 2.5

Size of Window: S1 = 0.75m x 0.80m S2 = 1.20m x 1.20m S3 = 1.23m x 1.48m S4 = 1.00m x 2.18m



FXi65

Advanced Thermal Performance



The FXi65 window system has been designed to give specifiers more choice and freedom in design, and features attractive curved profiles for added visual appeal, as well as a flat-faced option.

Key Features

- **Superior thermal efficiency.** A 19mm flush polyamide thermal break and innovative gasket detailing enhance thermal performance and help meet or improve on the requirements of the latest Building Regulations
- **Even greater design flexibility.** FXi65 accommodates 17mm up to 48mm glazing units, allowing more economical glass specifications to be used, whilst still delivering the targeted U-value. A U-value of 2.2W/m²K can be achieved, for example, even with a glass centre pane U-value as high as 1.9W/m²K
- **Additional design option.** There is the option of a composite open-out system which can be glazed from the outside and accommodates units from 19mm to 31mm, and a tilt/slide option.

Size and Weight Limitations

| | Maximum Size (mm) | Minimum Size (mm) | Maximum Weight |
|--|--------------------------------|-------------------|----------------|
| Top hung (butt hinge) | 1600 x 2000 h | Consult Technal | 80 kg |
| Top hung (projected) | 1600 x 2000 h | 450 x 350 h | 100 kg |
| Side hung (butt hinge, open out) | 900 x 1800 h | Consult Technal | 80 kg |
| Side hung (projected) | 900 x 1800 h | 350 x 450 h | 55 kg |
| Side hung (butt hinge, open in) | 900 x 1800 h 1000 x 1600 h | 350 x 450 h | 80 kg |
| Bottom hung | 1800 x 1200 h | 360 x 360 h | 75 kg |
| Tilt and turn | 1300 x 2100 h 1600 x 1800 h | 600 x 500 h | 130 kg |
| Tilt and slide (adjacent to fixed light) | 1680 x 2330 h | 690 x 990 h | 150 kg |

Weather Performance

In tests to BS EN standards, the FXi65 window meets and in some cases exceeds the requirements.

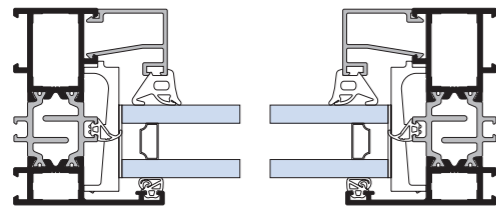
The system achieves the highest classification for air permeability in tests up to 600 Pa; it is fully watertight up to 1200 Pa, and is rated up to the equivalent pressure of 2000 Pa for wind resistance.

The FXi65 commercial window suite has been tested in accordance with BS EN 12207, BS EN 12208, and BS EN 12210 achieving the following results:

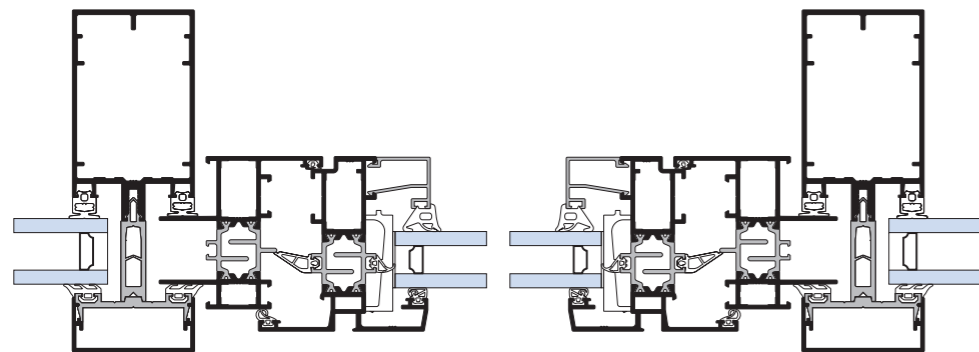
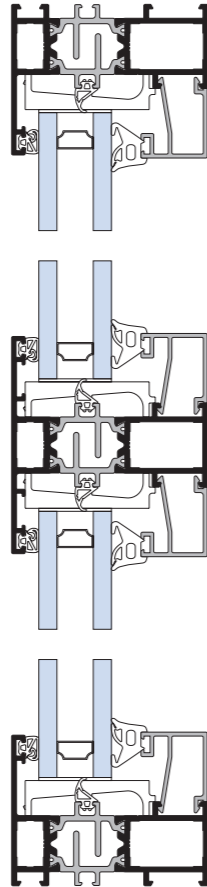


| | Test Size | Air Permeability | Water Tightness | Wind resistance |
|---|--------------------------------|------------------|--------------------|-----------------|
| Tilt and turn | 1300 x 2100 h 1600 x 1800 h | A*4 A*4 | E*E1200 E*E1050 | V*C4 V*C4 |
| Bottom hung, Open in | 1800 x 1200 h | A*4 | E*E1200 | V*C4 |
| Side hung 80 kg with FX805h Open in | 1000 x 1600 h | A*4 | E*E750 | V*C4 |
| Top hung (projected) | 1600 x 2000 h | A*4 | E*E1200 | V*C3 |
| Side hung (projected) | 900 x 1800 h | A*4 | E*E1200 | V*C5 |
| Tilt and slide | 2255 x 2390 h | A*4 | E*9A | V*C4 |

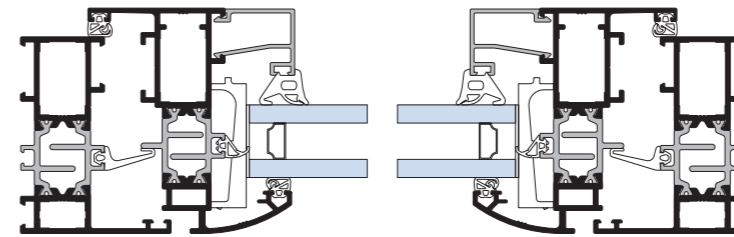
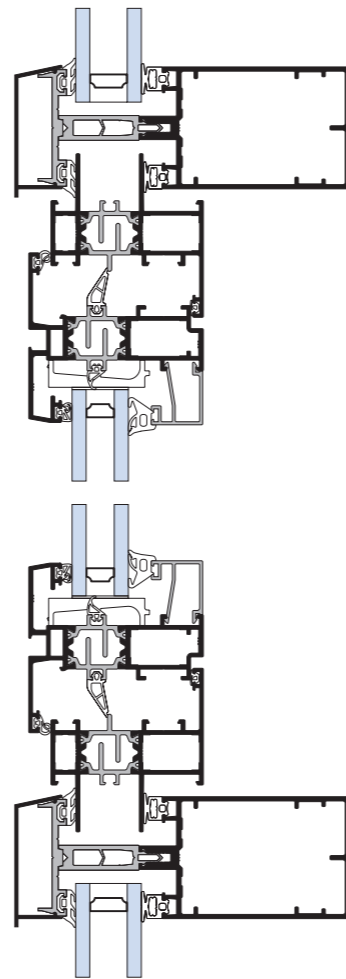
FXi65



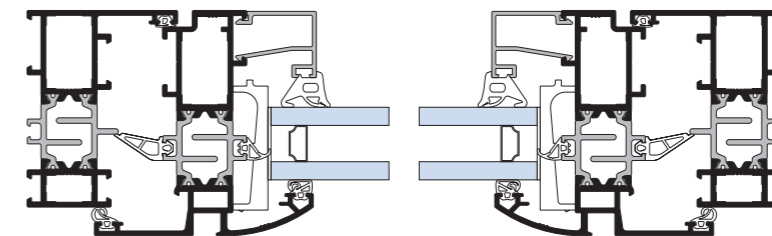
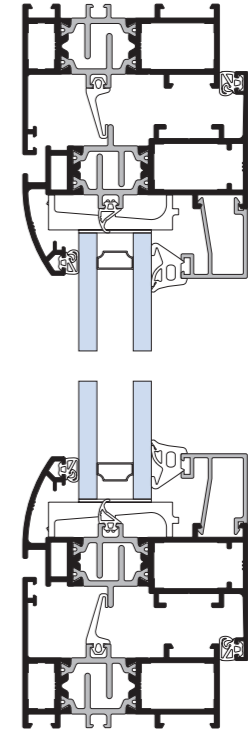
A FXi65 Glaze-in fixed light (composite)



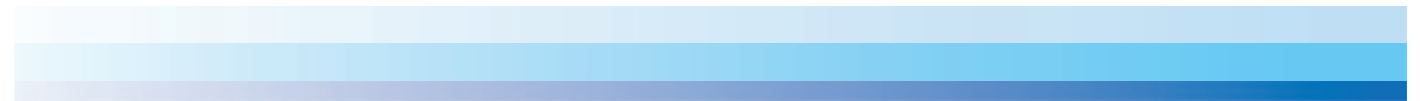
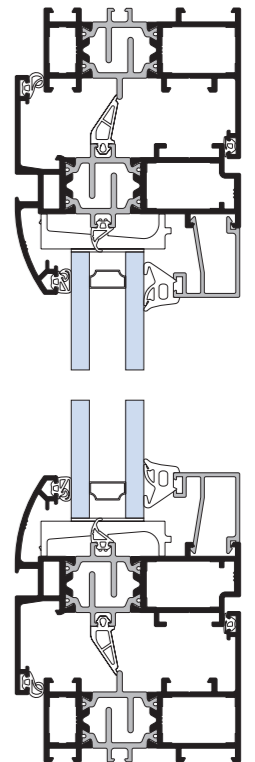
B FXi65 Open out into MX curtain walling



C FXi65 Tilt and turn (open in)



D FXi65 Top/side hung (open out)



FXi52

A Contemporary Window Solution



The FXi52 window system features elegantly curved profiles allowing architects to achieve a stylish accent for the building envelope.

Key Features

- **Excellent thermal performance.** The system incorporates an efficient 9mm flush polyamide thermal break
- **Visual appeal.** Optional curved or angled beading can be specified to add interest to the façade, both internally and externally
- **Design detailing.** The 52mm framing system uses profiles with three separate hollows for greater strength and insulation
- **Concealed drainage.** Ducts within the sections offer improved drainage and specially designed profiles can be supplied to conceal drainage and remove the need for caps on the outer frame
- **Choice of glazing options.** The FXi52 system will accommodate 5mm to 35mm glazing units
- **Balcony door option.** The FXi52 balcony door configuration completes the window suite.



Size and Weight Limitations

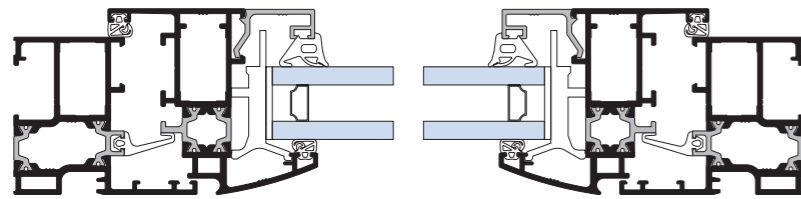
| | Maximum Size (mm) | Minimum Size (mm) | Maximum Weight |
|------------------------|--------------------------------|-------------------|----------------|
| Top hung (projected) | 1500 x 1600 h | 400 x 305 h | 75 kg |
| Side hung (projected) | 900 x 1600 h | 405 x 400 h | 55 kg |
| Top hung (butt hinge) | 1500 x 1500 h | 400 x 305 h | 80 kg |
| Side hung (butt Hinge) | 1000 x 2000 h | 405 x 400 h | 80 kg |
| Bottom hung | 1600 x 800 h | 360 x 360 h | 75 kg |
| Tilt and turn | 1300 x 2100 h 1600 x 1800 h | 600 x 500 h | 130 kg |
| Single door | 1000 x 2300 h | | 80 kg |
| Double door | 1800 x 2300 h | | 80 kg |

Weather Performance

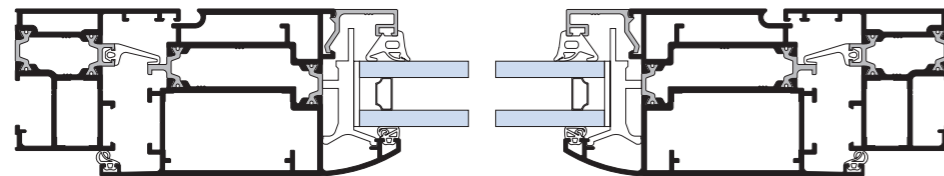
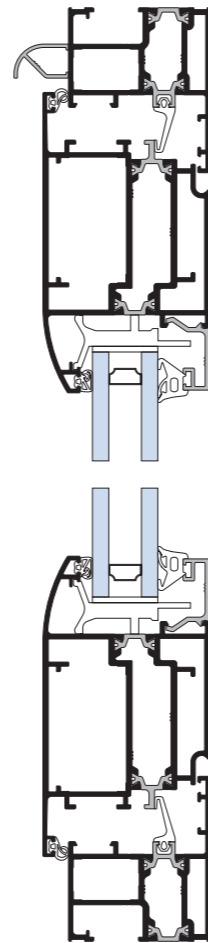
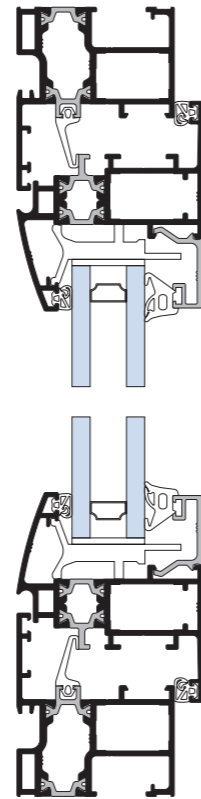
The FXi52 commercial window suite has been tested in accordance with BS 6375 Parts 1 and 2 achieving the following results:

| | Test Size | Air Permeability | Water Tightness | Wind resistance |
|-----------------------|---|------------------|----------------------------|-------------------------------|
| Top hung (projected) | 1400 x 1400 h | C | 600 Pa | 2400 Pa |
| Side hung (projected) | 940 x 1400 h | C | 600 Pa | 2400 Pa |
| Top hung (butt hinge) | 1200 x 1800 h | C | 600 Pa | 2400 Pa |
| Bottom hung | 1400 x 800 h | C | 600 Pa | 2400 Pa |
| Tilt and turn | 1200 x 1600 h 1300 x 2100 h 1600 x 1800 h | C C C | 600 Pa 600 Pa 600 Pa | 2400 Pa 2400 Pa 2400 Pa |
| Single door 1 Pt | 1000 x 2150 h | B | 200 Pa | 1600 Pa |
| Single door 3 Pt | 1000 x 2150 h | C | 600 Pa | 1600 Pa |
| Double door 3 Pt | 1800 x 2300 h | C | 400 Pa | 1600 Pa |

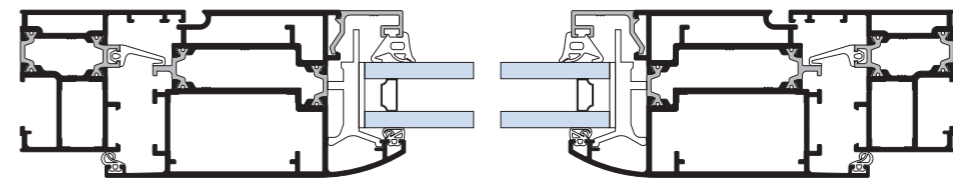
FXi52



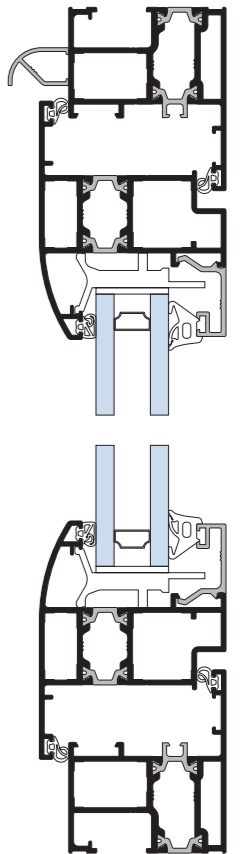
A FXi52 Tilt and turn (open in)



B FXi52 Open out balcony door



C FXi52 Top/side hung (open out)



FXi46

A High Quality,
Highly Cost-effective
Window System



A modern and effective glazing solution, the FXi46 window option follows the same advanced design principles as the FXi52 and FXi65 systems, featuring innovative detailing and quality components for long-term performance.

Key Features

- **Simple, clean lines.** Slim sections create a crisp, modern finish for any architectural situation
- **Thermal efficiency.** An 8mm flush polyamide thermal bridge provides thermal efficiency and the option for dual colours
- **Meeting project requirements.** FXi46 can accommodate 5mm to 29mm glazing units
- **Full system compatibility.** The 46mm module window can be inserted into Technal's MX high rise curtain walling and MODAL low rise façade system.



Size and Weight Limitations

| | Maximum Size (mm) | Minimum Size (mm) | Maximum Weight |
|--|--------------------------------|-------------------|----------------|
| Top hung (heavy duty, butt hinge) | 1600 x 1800 h | 305 x 305 h | 80 kg |
| Side hung (heavy duty, butt hinge) | 1200 x 1800 h | 405 x 305 h | 80 kg |
| Top hung (butt hinge) | 1500 x 1200 h | 305 x 305 h | 80 kg |
| Side hung (butt hinge) | 800 x 1400 h | 405 x 305 h | 80 kg |
| Top hung (projected) | 1400 x 1500 h | 305 x 305 h | 75 kg |
| Side hung (projected) | 800 x 1500 h | 405 x 305 h | 55 kg |
| Bottom hung | 1400 x 800 h | 360 x 360 h | 75 kg |
| Tilt and turn | 1300 x 2100 h 1600 x 1800 h | 600 x 500 h | 130 kg |
| Pivot – horizontal Pivot – vertical | 1600 x 1800 h 1800 x 1600 h | 600 x 600 h | 80 kg |

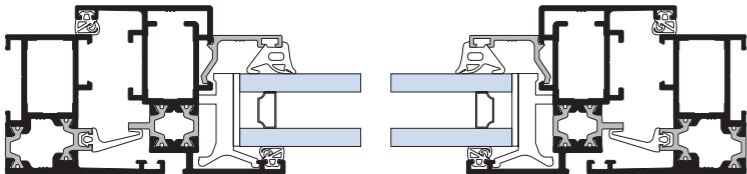
Weather Performance

The FXi46 commercial window suite has been tested in accordance with BS 6375 Parts 1 and 2 achieving the following results:

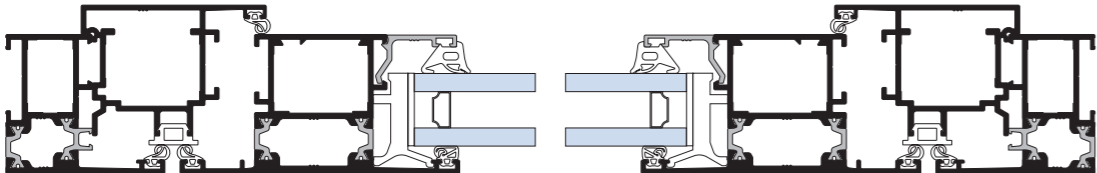
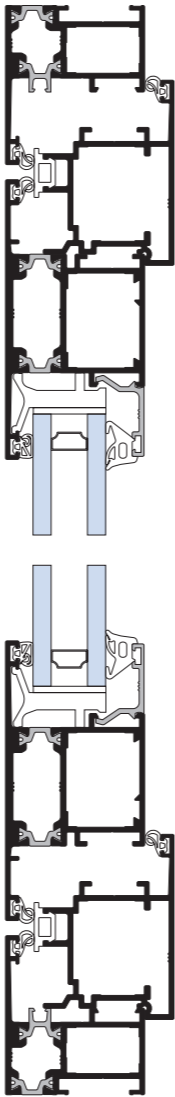
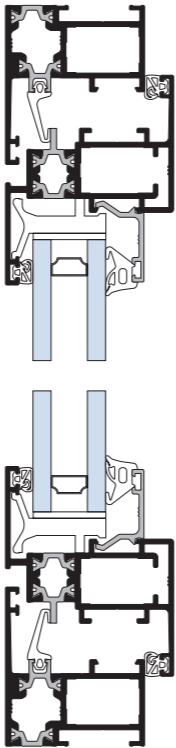
| | Test Size | Air Permeability | Water Tightness | Wind resistance |
|--|--------------------------------|------------------|------------------|--------------------|
| Top hung (projected) | 1600 x 1800 h | C | 600 Pa | 2400 Pa |
| Side hung (projected) | 800 x 1500 h | C | 600 Pa | 2400 Pa |
| Bottom hung | 1400 x 800 h | C | 600 Pa | 2400 Pa |
| Tilt and turn | 1400 x 1400 h 1300 x 2100 h | C C | 600 Pa 600 Pa | 2400 Pa 2400 Pa |
| Pivot – horizontal Pivot – vertical | 1600 x 1800 h 1800 x 1600 h | C C | 600 Pa 600 Pa | 2400 Pa 2400 Pa |



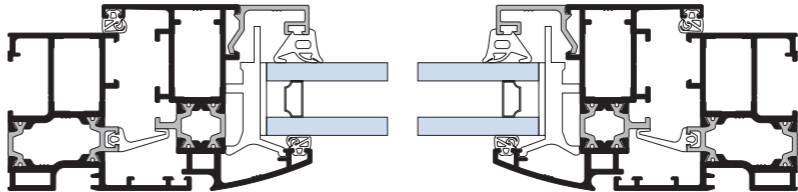
FXi46



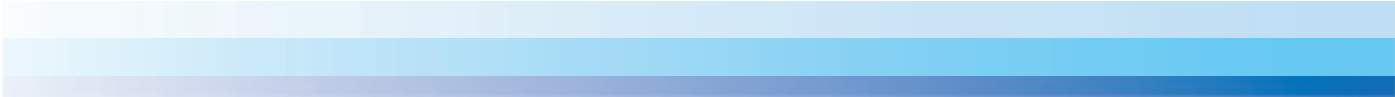
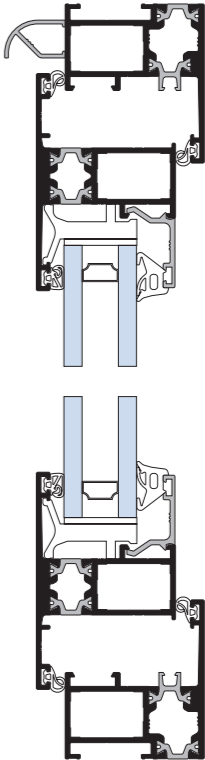
A FXi46 Tilt and turn (open in)



B FXi46 Horizontal pivot



C FXi46 Top/side hung (open out)



FXi

Design Specifications



Materials and Components

As with all Technal products, only the highest quality materials and components are used for the FXi system for low maintenance and performance over time:

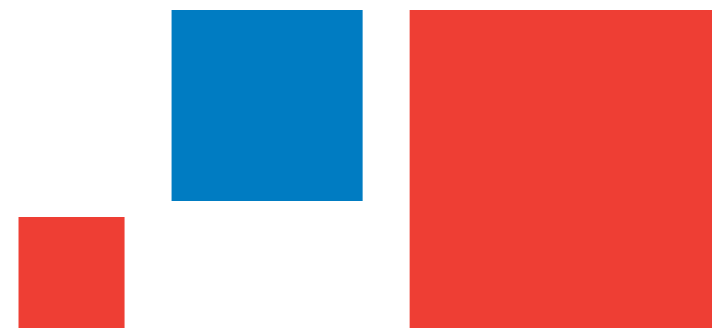
- Aluminium profiles are extruded from alloys 6005T6, 6063 T6 or 6060 T5 to BS EN 12020, BS EN 573-3, BS EN 515 and BS EN 775-1 to 9
- Accessories are cast from Zamak 5 or A-S9G03 to BS EN 12844
- Glazing gaskets are EPDM SH 60-75
- Polyamide thermal breaks are extruded from PA6-6 (0.25 FV)
- Screws and components are either stainless steel, cadmium-plated steel or other corrosion-resistant materials.



Finishes and Colours

A wide range of finishes is available for the FXi window suite to meet individual project requirements, complement existing buildings and offer additional design freedom for architects and specifiers:

- Natural self-colour or Anolok anodised in accordance with BS EN 12373-1:2001 and BS 3987
- Stoved polyester powder coated finishes in a wide palette of colours and in accordance with BS 6496
- The FXi suite is also available in Technal's exclusive flecked gloss Cendré polyester powder coated colours for a stylish and contemporary appearance.



TECHNAL

Inspirational Façade Solutions

Innovative Glazing Products

The Technal brand from Hydro Building Systems was created 50 years ago and is a pioneering international specialist in architectural aluminium façade systems.

Technal has established an unrivalled reputation for innovative and inspirational design solutions and has built up an impressive portfolio of award-winning projects.

With a history in the UK which spans more than 30 years, Technal's systems have been used to create purpose-designed façades for buildings in sectors as diverse as offices, airports, leisure, schools and higher education, healthcare and apartments.

Technal has a clear understanding of the requirements of architects, contractors, developers, building occupiers and fabricators, which has enabled it to engineer an innovative, technically advanced and highly flexible product portfolio.



Technical Support for Architects and Contractors

A comprehensive range of support services is available to architects and contractors, which includes technical assistance with design development, through to the preparation of specifications.

To help specifiers in the production of faster and more accurate project drawings, CAD files for all the façade systems offered by Technal can be downloaded from the specification section of the Technal website.

Technal also has the capabilities and resources to respond to individual project needs through more bespoke designs for specific schemes, performance enhancements and new innovations to enhance both new and existing architecture.



National Network of Fabricators and Installers

Technal has a national network of approved fabricators and installers, and recognises the importance of fabrication and installation for the long-term performance of its systems.

As a subscribing sponsor of the Centre for Window and Cladding Technology and an active member of the Council for Aluminium in Building, Technal is committed to advising and providing training support for its network of fabricators and installers from its dedicated training centre to ensure standards of the very highest quality.



Committed to Protecting the Environment

Technal is working with leading industry specialists and associations to continually improve the recyclability of aluminium and to reduce carbon emissions during the life cycle of its products.

Its research and development work has also achieved an impressive four-fold increase in the thermal performance of its systems over the last 20 years. And the demand for larger glazed spans generates increased solar gain in winter and reduces the reliance on artificial lighting.

The inherent qualities of aluminium, its infinite recyclability, strength and lightness, durability and low maintenance qualities mean it is one of the most sustainable building materials.

An average of 95 per cent of the aluminium in buildings is collected for recycling. This process saves 95 per cent of the energy needed to produce prime metal and typically, 95 per cent or more of the original material is still recoverable (*source*: Council for Aluminium in Building).

