WORKING WITH SKY-FRAME.

EN

A VIEW,
NOT A
WINDOW.

Working with Sky-Frame means creating comfortable, handsome living environments that make no compromises. The frameless sliding window is a modular system that combines Swiss engineering ingenuity with timeless appeal.


SKY-FRAME

SKY-FRAME SYSTEM.

Sky-Frame sliding window systems comprise freely combinable elements that breathe life into any style of residential architecture. The rectilinear, organically curved and inclined glass units of the Classic, Arc and Slope systems guarantee a truly distinctive living experience. Even the single-glazed Sky-Frame 1 model offers excellent soundproofing. The double-glazed Sky-Frame 2 and triple-glazed Sky-Frame 3 assemblies additionally meet high thermal insulation requirements. Various add-on features are also available for extra convenience.

Sky-Frame	**Classic**	**Arc**	**Slope***
Technology			
1	•		
2	•	•	•
3	•	•	•
Features			
Fly	•		
Sun*	•		
Automation	•	•	•
Guard*	•	•	•

* available on request

Sky-Frame Classic
The rectilinear Classic window system has timeless appeal. True to the Bauhaus vision, the ceiling-height glass facades help to create a minimalist architecture in which the view takes centre stage.
For technical details, see page 09 ff.

Sky-Frame Arc
The organic forms of the Arc model serve to soften the contours of domestic architecture. The curved sliding elements offer a bold counterpoint to the linearity of the spatial and facade composition.
For technical details, see page 15 ff.

Sky-Frame Slope
The Slope system allows the sliding windows to be installed at an angle. The glass fronts can be incorporated with either an inward or outward inclination. The distinctive spatial geometry offers a unique living experience.
For technical details, see page 19 ff.

TECHNOLOGY

Sky-Frame 1
The single-glazed Sky-Frame 1 system (12 mm) caters for applications without thermal insulation requirements.
For technical details, see page 24 ff.

Sky-Frame 2
The double-glazed Sky-Frame 2 assemblies (30 mm) meet high sound and thermal control requirements.
For technical details, see page 26 ff.

Sky-Frame 3
The triple-glazed Sky-Frame 3 technology (54 mm) further enhances the thermal insulation performance to meet the most stringent standards.
For technical details, see page 28 ff.

FEATURES

Sky-Frame Fly
Sky-Frame Fly allows residents to enjoy summer weather without being plagued by insects. When not in use, the pleated screen fully retracts out of sight into the frame.
For technical details, see page 31 ff.

Sky-Frame Sun
The Sun solar shading assembly offers protection against heat and strong sunshine. The flat aluminium slats are carried on filigree guide cords that are easy to remove and fix back in place whenever necessary.
For technical details, see page 35 ff.

Sky-Frame Automation
The electric drive allows straightforward and virtually noiseless operation of the sliding elements at the press of a button.
For technical details, see page 41 ff.

Sky-Frame Guard
The Sky-Frame sliding window system is burglar-resistant and can, where required, be fitted with laminated safety glass and additional security hardware concealed in the frame. Alarm sensors can also be integrated to monitor the windows.
For technical details, see page 43 ff.

SKY-FRAME CLASSIC

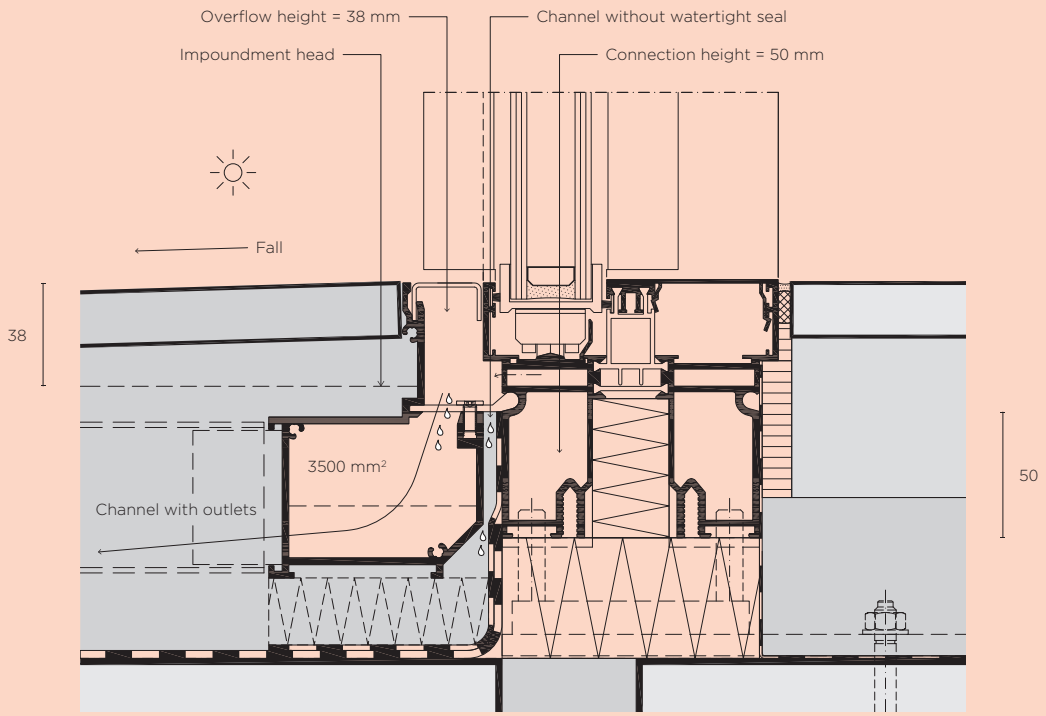
SYSTEM

The name “Classic” not only evokes the timeless appeal of the rectilinear window assembly, but also highlights its historical significance as the first ever Sky-Frame system. The sliding windows comprise insulating glass units with perimeter aluminium or glass-fibre-reinforced plastic (GRP) sections. Mounted in aluminium frames that are fitted flush with floor and ceiling, the sliding units offer minimum rolling resistance when operated. The system drainage for the flush assembly is via recessed channel or is installed below the raised outdoor floor covering.

SKY-FRAME CLASSIC

SYSTEM

Vertical section
Ceiling and floor connection (M 1:3)



ELEMENT TYPES

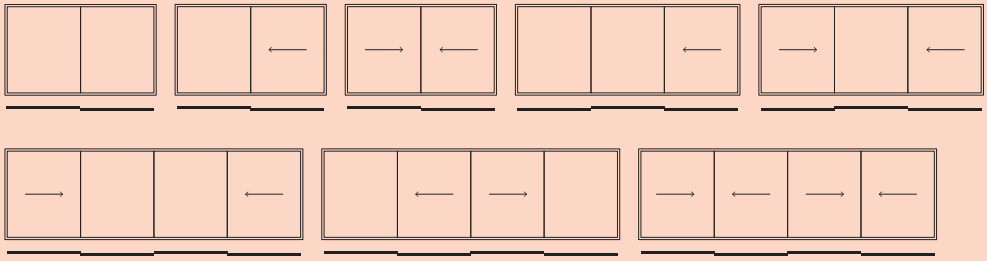
Element types and sizes
- Sliding panels: max. height 4 m, max. width 2.30 m, max. area 8 m^2
- Fixed element: max. 3.15 m x max. 4 m (max. 12.6 m^2). Where edge length in both dimensions exceeds 2.6 m, double-glazed insulating glass unit used for Sky-Frame 3 system.
- Centre mullion width: 2 cm, 2.8 cm with height of 4 m, centre opening offset 3.4 cm
- Same elements can also be used for balustrade windows

Multi-point locking
- Unlocking handle fitted flat on frame, operated by gentle upward movement
- Optional: integrable, elegant locking cylinder

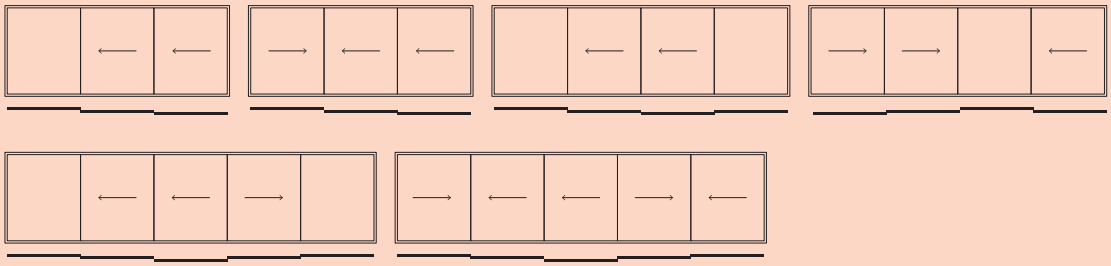
SKY-FRAME CLASSIC

OPENING VARIANT EXAMPLES

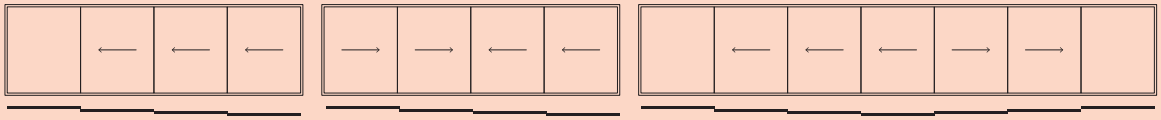
Opening variants of 2-track sliding windows



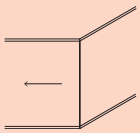
Opening variants of 3-track sliding windows



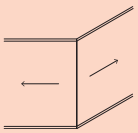
Opening variants of 4-track sliding windows



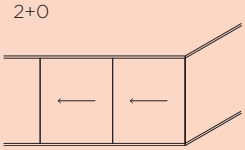
Corner opening
1+0



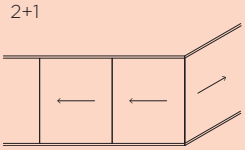
Corner opening
1+1



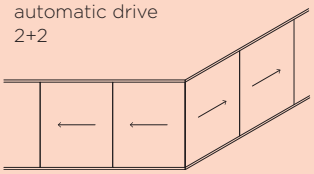
Corner opening with
automatic drive
2+0



Corner opening with
automatic drive
2+1



Corner opening with
automatic drive
2+2



Types of systems and openings

- 2-, 3- and 4-track systems, with 5 tracks also available on request; 4-track systems only possible with Sky-Frame 2; 5-track systems for Sky-Frame 2 require advance project-specific clarification
- Side openings, centre openings offset, centre openings on same track, corner openings
- Any number of panels can be combined, alternate or symmetrical

SKY-FRAME ARC

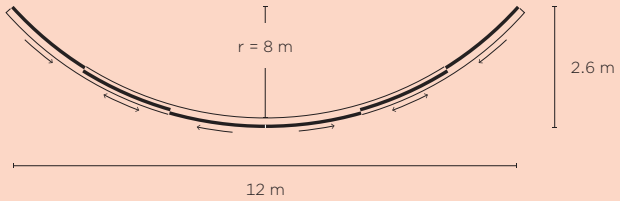
SYSTEM

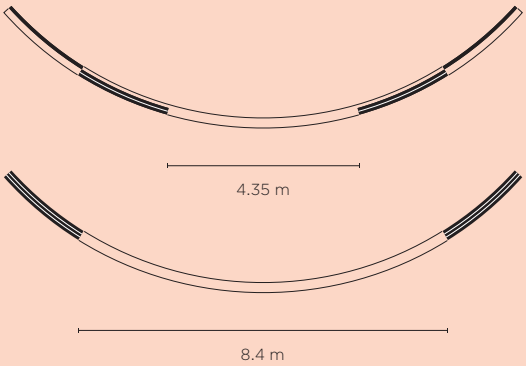
The sliding elements of Sky-Frame Arc are used to create curved glass fronts, thereby adding organic contours to the home environment. The radiused glass units offer smooth running performance and can be equipped with an automatic drive on request. The system meets all Sky-Frame standards and, as a streamline architectural feature, opens up a wealth of additional design options.

SKY-FRAME ARC

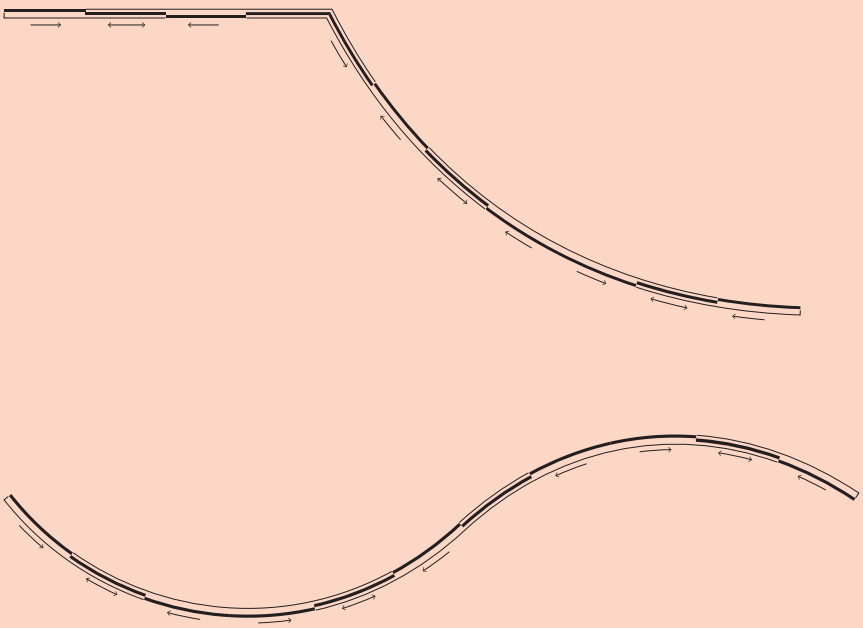
OPENING VARIANT EXAMPLES

Opening variants





Straight edge (Classic) and curve (Arc) combination
Curve combination (Arc)



DETAILS

Characteristics		**Sky-Frame 2**		**Sky-Frame 3**	
Glass type		Double-glazed insulating glass		Triple-glazed insulating glass	
Glass coating		Thermal insulation and UV protection		Thermal insulation and UV protection	
U_w calculation calculation (width x height 4.6 x 3 m) in accordance with the standard		SIA 331	EN 10077	SIA 331	EN 10077
Thermal insulation value (glass U_g = 1.0)	U_w =	1.2 W/m²K	1.3 W/m²K		
Thermal insulation value (glass U_g = 0.5)	U_w =			0.7 W/m²K	0.8 W/m²K
Sound reduction up to	$R_{w,P}$	37 dB		44 dB	
Sliding elements (max. width x height)		2.3 x 4 m (max. 8 m²)		2.3 x 4 m (max. 8 m²)	
Radius (minimum)		8 m Variations on request		8 m Variations on request	

Features
Sky-Frame Automation on request
Sky-Frame Guard: – RC2 (WK2) Connection to alarm system: – Position monitoring – Deadbolt monitoring

SKY-FRAME SLOPE

SYSTEM

Depending on requirements, Sky-Frame Slope sliding windows can be installed with an inward or outward inclination. The system meets all Sky-Frame standards while generating a distinctive spatial geometry. The bearing assembly is able to accommodate all vertical and horizontal forces, thereby achieving superior running performance. Regardless of inclination, the system drainage meets all driving rain resistance requirements.

SKY-FRAME SLOPE

DETAILS + INCLINATION OPTIONS

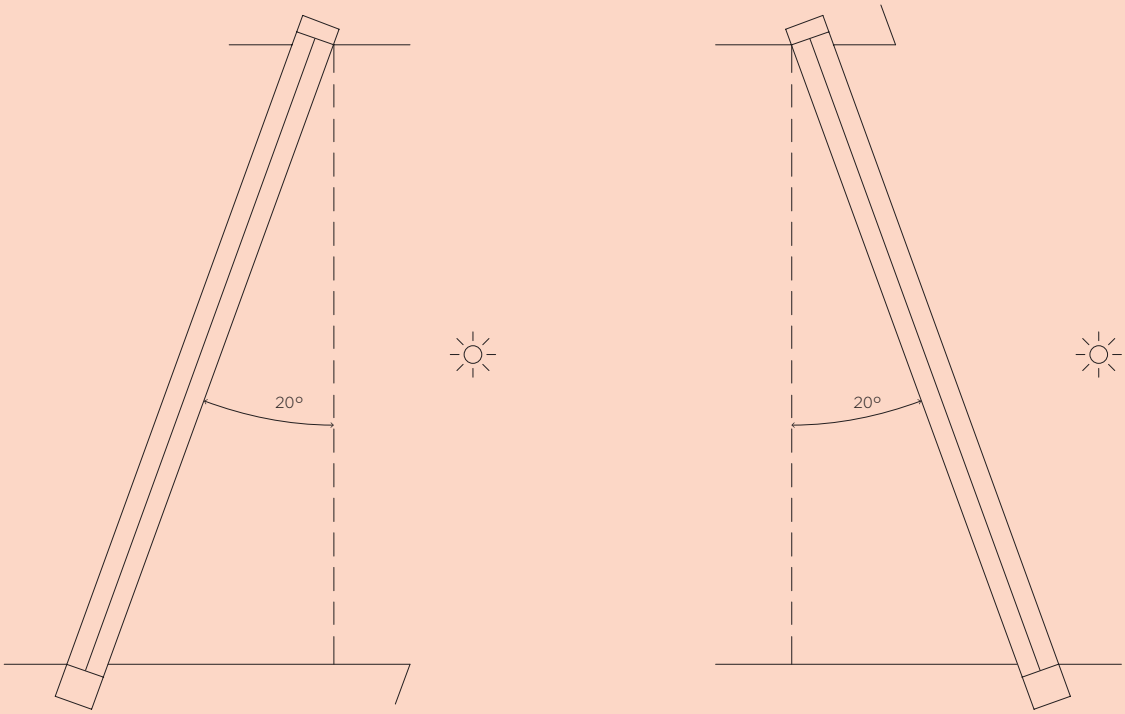
Characteristics		**Sky-Frame 2**		**Sky-Frame 3**	
Glass type		Double-glazed insulating glass		Triple-glazed insulating glass	
Glass coating		Thermal insulation and UV protection		Thermal insulation and UV protection	
Calculation U_w (width x height 4.6 x 3 m) to standard		SIA 331	EN 10077	SIA 331	EN 10077
Thermal insulation value (glass U_g = 1.0)	U_w* =	1.2 – 1.6 W/m²K	1.3 – 1.7 W/m²K		
Thermal insulation value (glass U_g = 0.5)	U_w* =			0.7 – 0.9 W/m²K	0.8 – 1.0 W/m²K
Sliding elements (max. width x height)		Dependent on inclination and glass type		Dependent on inclination and glass type	
Number of tracks (max.)		3 tracks		3 tracks	
Inclination to vertical (max.)		20° Deviations on request		20° Deviations on request	

* dependent on inclination

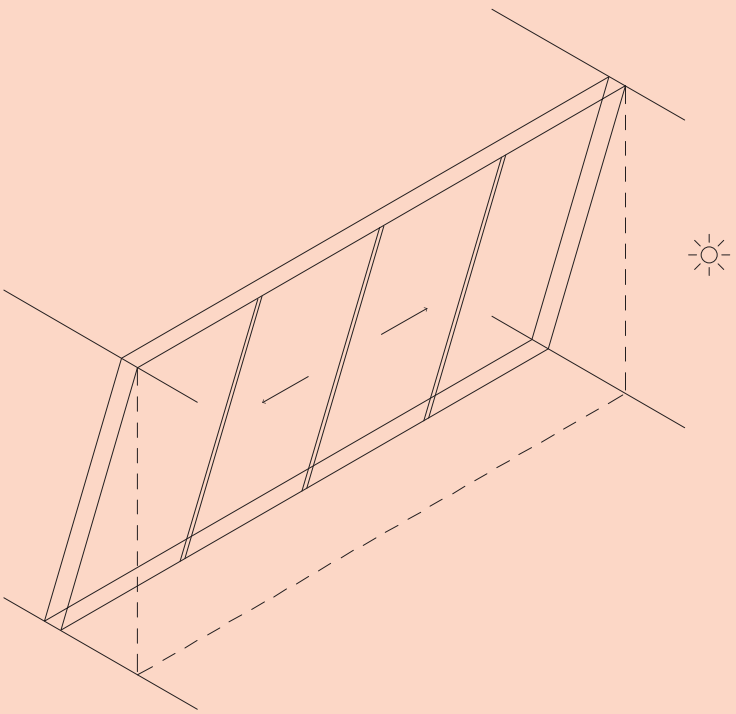
Features
Sky-Frame Fly on request
Sky-Frame Sun on request
Sky-Frame Automation on request
Sky-Frame Guard: – RC2 (WK2) Connection to alarm system: – Position monitoring – Deadbolt monitoring – Glass breakage monitoring

Extras
Sky-Frame Slope on request

Both inward and outward inclination possible



Example of outward inclination



SKY-FRAME 1–3

TECHNOLOGY

The 12 mm thick, single-glazed Sky-Frame 1 units are suitable for applications without thermal insulation requirements. The system also incorporates special sliding seals that offer a high level of sound control.

The excellent sound and thermal control standards met by the Sky-Frame 2 technology have made it the most popular Sky-Frame solution. The slim (only 30 mm thick) double-glazed insulating glass assembly has proved an outstanding performer in a wide range of climate zones.

The Sky-Frame 3 system with its 54 mm thick insulating glass units meets the highest standards. The triple-glazed elements offer extra stability and even greater resistance to wind loads.

SKY-FRAME 1

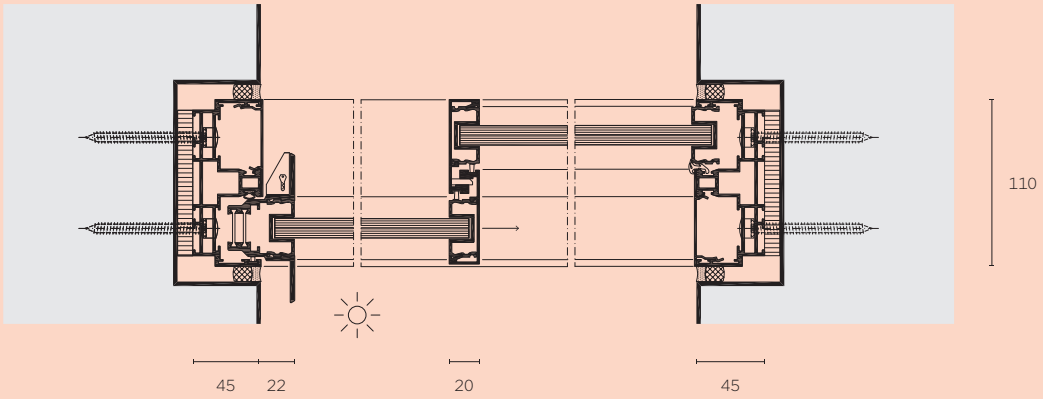
DETAILS + SECTIONS

Characteristics	Sky-Frame 1
Sliding elements (max. width x height)	3.2 m x 4 m larger on request
Fixed elements (max. width x height)	3.2 m x 4 m / 4 m x 3.2 m larger on request
Single glazing	6 – 12 mm
Daylight / glass ratio	98 %
Water tightness to driving rain up to class	9A (EN 12208 / EN 1027*)
Air permeability up to class	4 (EN 12207 / EN 12211*)
Resistance to wind load up to	C3 (EN 12210 / EN 1627*)
Sound reduction up to	$R_{w,P}$ 37 dB (EN ISO 717-1 / EN ISO 10140*)

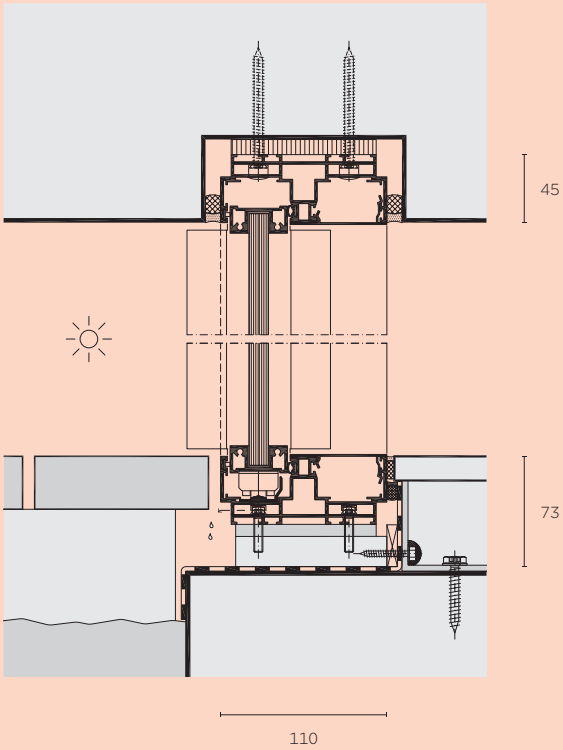
Features
Sky-Frame Fly
Sky-Frame Sun
Sky-Frame Automation: Single, telescopic (2–4 four-leaf)
Connection to alarm system: – Position monitoring – Deadbolt monitoring

* Classification standard / test standard

Horizontal section
Side wall junctions (scale 1:5)



Vertical section
Floor and ceiling junctions (scale 1:5)



SKY-FRAME 2

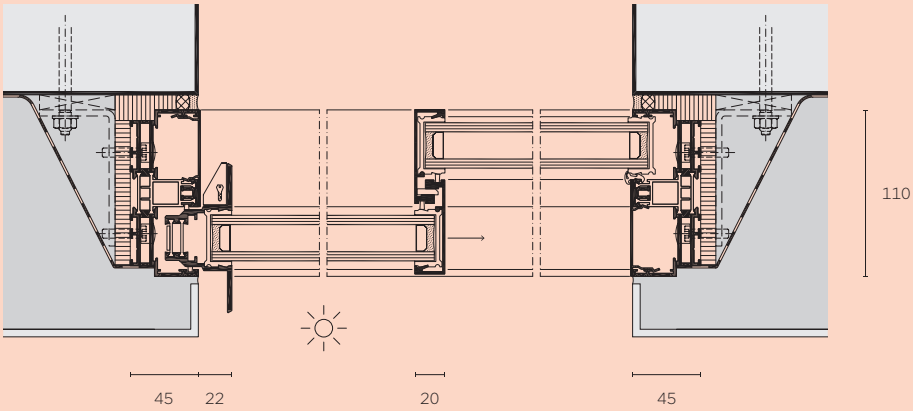
DETAILS + SECTIONS

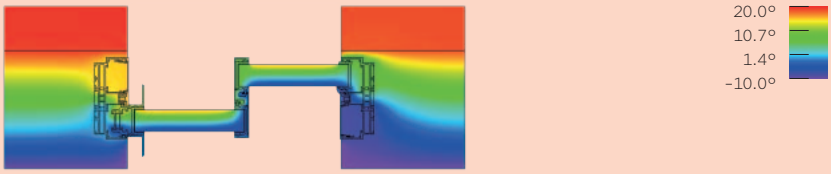
Characteristics		**Sky-Frame 2**	
Calculation U_w (width x height 4.6 x 3 m) acc. to norm		SIA 331	EN 10077
Heat insulation value (glass U_g = 1.1)	U_w =	1.25 W/m²K	1.36 W/m²K
Wärmedämmwert (glass U_g = 1.0)	U_w =	1.15 W/m²K	1.27 W/m²K
Sliding elements (max. width x height)		2.3 m x 4 m larger on request	
Fixed elements (max. width x height)		2.6 m x 4 m / 4 m x 2.6 m larger on request	
Insulating glass (double glazing)		30 mm	
Daylight/glass ratio		98 %	
Water tightness to driving rain up to class		9A (EN 12208/EN 1027*)	
Air permeability up to class		4 (EN 12207/EN 12211*)	
Resistance to wind load up to		C3 (EN 12210/EN 1627*)	
Anti-fall protection, Category		A (TRAV/TRLV)	
Sound reduction		$R_{w,P}$ 37 dB (EN ISO 717-1/EN ISO 10140*)	

Features
Sky-Frame Fly
Sky-Frame Sun
Sky-Frame Automation: Single, telescopic (2–4 four-leaf)
Sky-Frame Guard: – RC2 (WK2) (EN 1628, 1629, 1630/EN 1627*) Connection to alarm system: – Position monitoring – Deadbolt monitoring – Glass breakage sensor

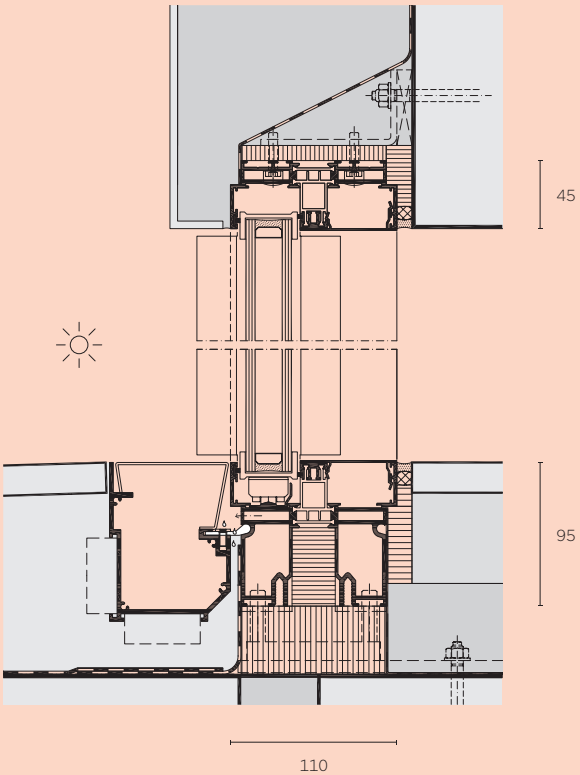
* Classification standard / test standard

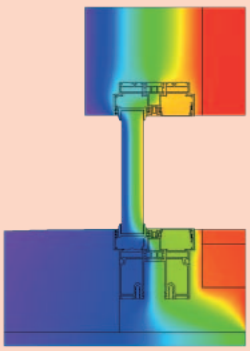
Horizontal section
Side wall junctions (scale 1:5)
and temperature profile (scale 1:10)





Vertical section
Floor and ceiling junctions (scale 1:5)
and temperature profile (scale 1:10)





SKY-FRAME 3

DETAILS + SECTIONS

Characteristics		Sky-Frame 3	
Calculation U_w (width x height 4.6 x 3 m) acc. to norm		SIA 331	EN 10077
Heat insulation value (glass U_g = 0.6)	U_w =	0.75 W/m²K	0.87 W/m²K
Heat insulation value (glass U_g = 0.5)	U_w =	0.66 W/m²K	0.78 W/m²K
Sliding elements (max. width x height)		2.3 m x 4 m larger on request	
Fixed elements (max. width x height)		2.6 m x 4 m / 4 m x 2.6 m larger on request	
Insulating glass (triple glazing)		54 mm	
Daylight/glass ratio		98 %	
Water tightness to driving rain up to class		9A (EN 12208/EN 1027*)	
Air permeability up to class		4 (EN 12207/EN 12211*)	
Resistance to wind load up to		B3 (EN 12210/EN 1627*)	
Anti-fall protection, Category		A (TRAV/TRLV)	
Sound reduction up to		$R_{w,P}$ 44 dB (EN ISO 717-1/EN ISO 10140*)	
Module-MINERGIE (Passive house standard)		certified (519.09)	
Module-MINERGIE-P (Passive house standard)		certified (519.12)	

Features

Sky-Frame Fly

Sky-Frame Sun

Sky-Frame Automation: Single, telescopic (2–4 four-leaf)

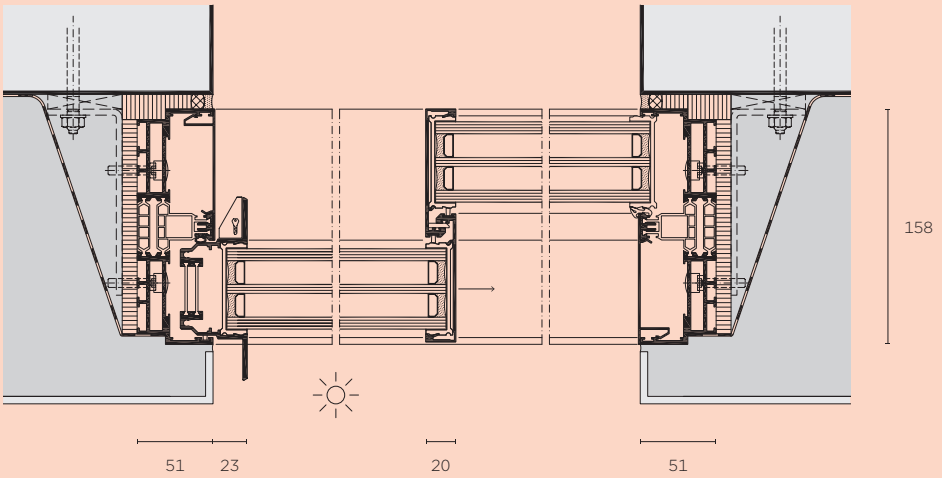
Sky-Frame Guard:
– RC2 (WK2) (EN 1628, 1629, 1630/EN 1627*)
Connection to alarm system:
– Position monitoring
– Deadbolt monitoring
– Glass breakage sensor

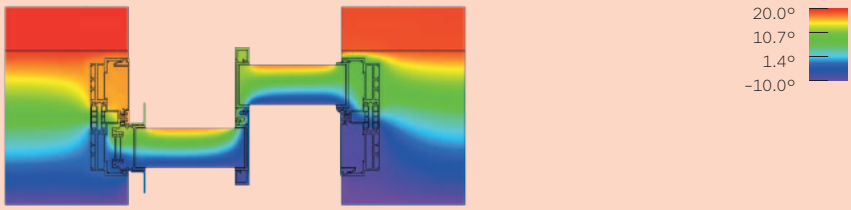
MINERGIE-P®
Mehr Lebensqualität, tiefer Energieverbrauch
Meilleure qualité de vie, faible consommation d'énergie

MINERGIE® MODUL
Fenster
Fenêtre
FFF-SZFF

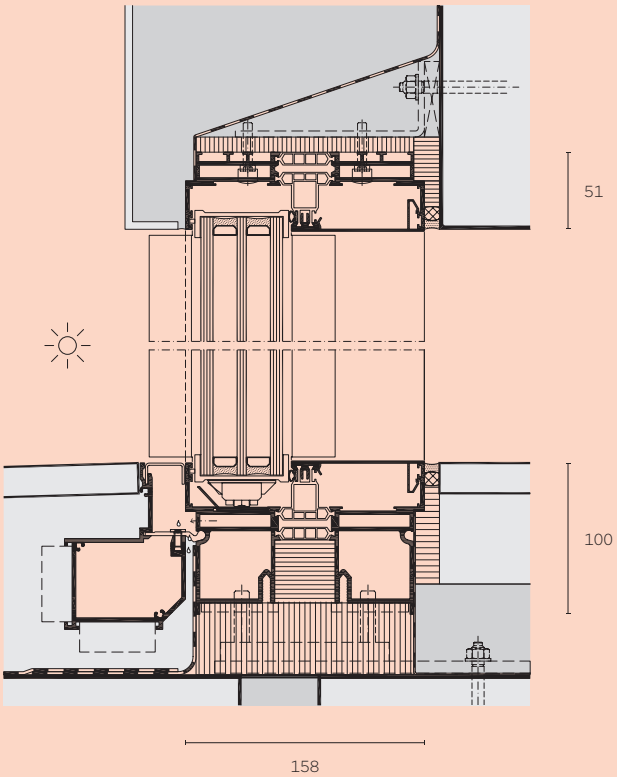
* Classification standard / test standard

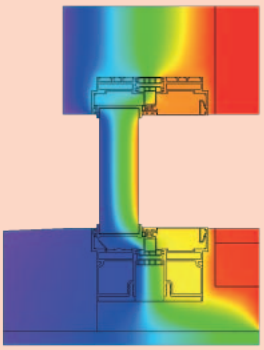
Horizontal section
Side wall junctions (scale 1:5)
and temperature profile (scale 1:10)





Vertical section
Floor and ceiling junctions (scale 1:5)
and temperature profile (scale 1:10)





SKY-FRAME FLY

FEATURE

When not in use, the frameless, pleated Fly insect screen fully retracts out of sight into the frame. Tear-resistant tension cords made from Vectran fibre and the integral system section guarantee maximum stability and weather resistance. Fly can cover openings up to 1 m wide.

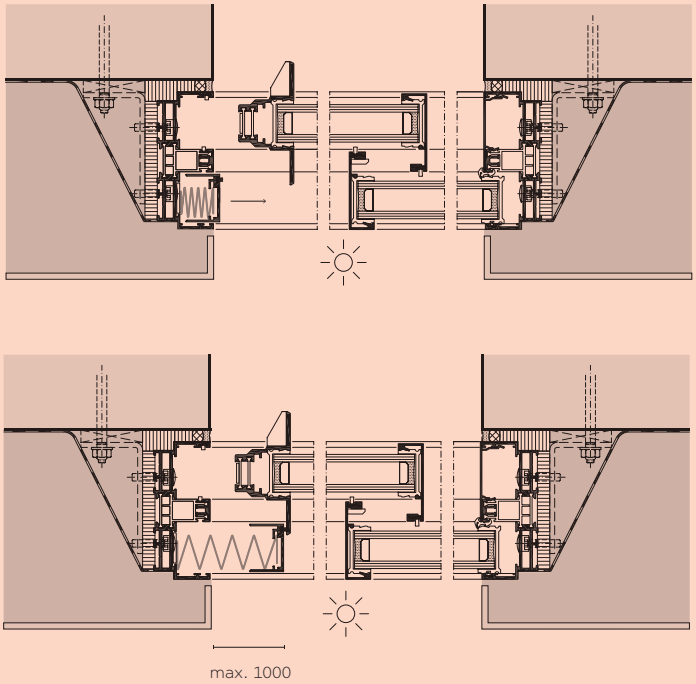
SKY-FRAME FLY

DETAILS + SECTIONS

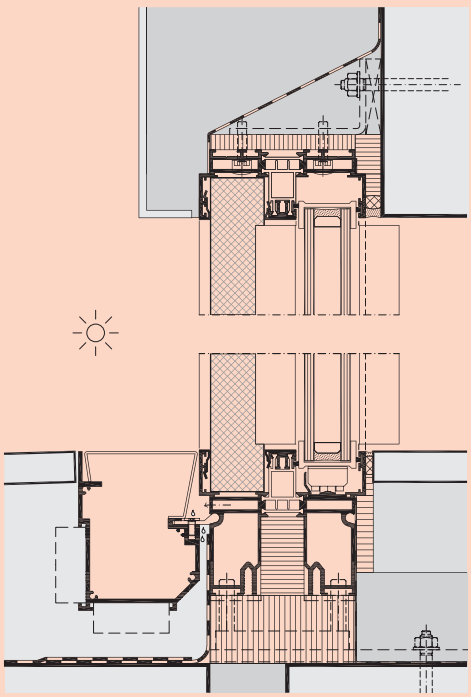
Characteristics

System	Classic, Slope (on request)
Technology	Sky-Frame 1, 2 and 3
Material	Polyester and Vectran
Pull-out width (max.)	1 m

Horizontal section
Side wall junction (scale 1:6)
Insect screen in closed position (top drawing)
Insect screen in open position (bottom drawing)



Vertical section
Floor and ceiling junctions (scale 1:5)



SKY-FRAME SUN

FEATURE

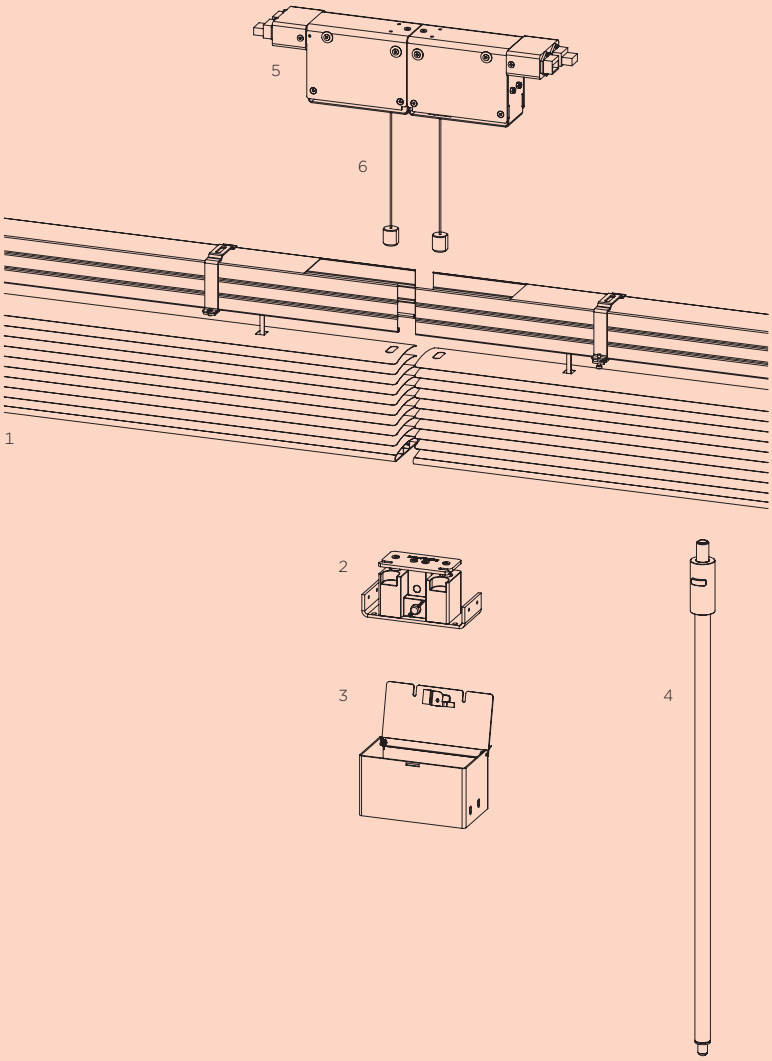
The Sun venetian blind system with its flat, 80 mm wide aluminium slats offers the perfect solar shading solution for the filigree Sky-Frame sliding windows. Plastic-sheathed guide cords carry slats up to 3 m long to a maximum height of 4 m. The Sun-Box recessed into the floor and the winding mechanism in the blind box facilitate swift dismantling of the guide cords to create an unobstructed opening and their subsequent re-installation.

SKY-FRAME SUN

COMPONENTS

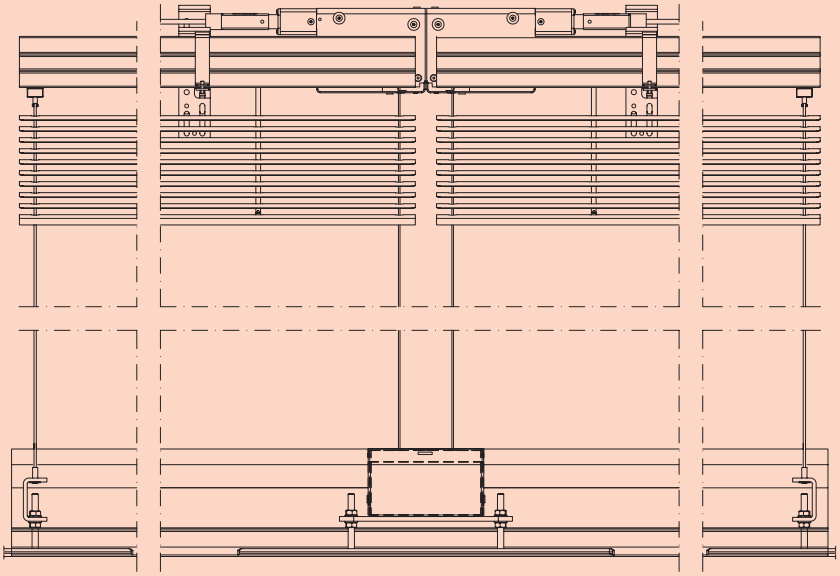
Exploded view

1 Venetian blind
2 Cord-tensioning mechanism
3 Sun-Box for cord tensioner
4 Telescopic rod with magnet
5 Winding mechanism
6 Guide cord with stop

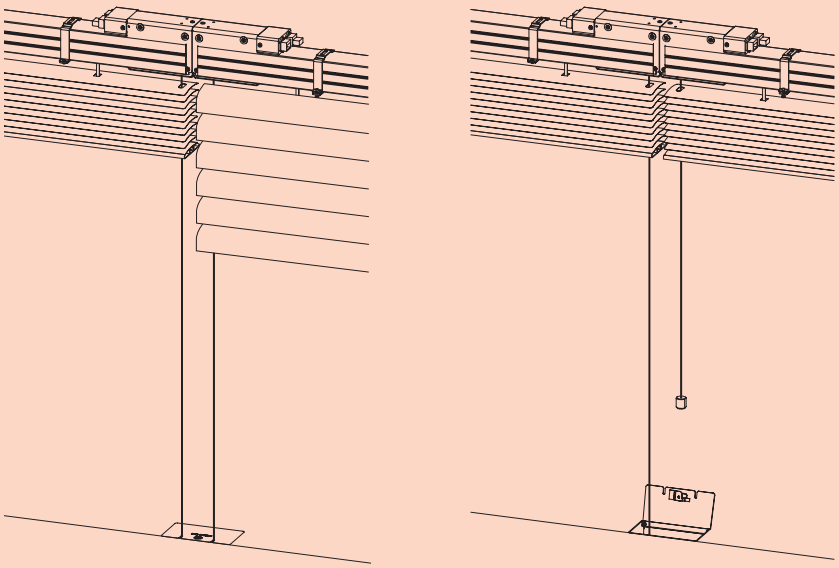


APPLICATION

Front view



Venetian blinds in normal service (pictured left)
and disengagement of guide cords from Sun-Box when unobstructed opening is required (pictured right)



SKY-FRAME SUN

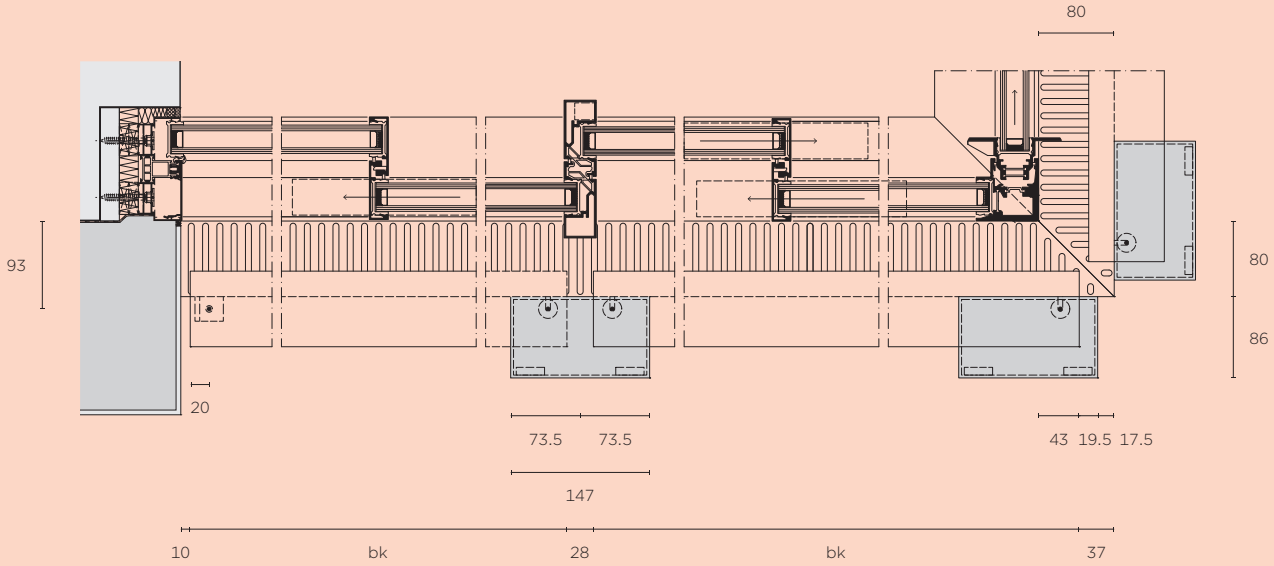
DETAILS + SECTIONS

Characteristics	
System	Classic, Slope (on request)
Technology	Sky-Frame 1, 2 und 3
Blind system	Griesser Aluflex 80 flat-slat venetian blind
Slats	Aluminium, w = 80 mm Blinds can be supplied in all colours of Griesser BiColor and GriColors ranges Our recommended interior colour: – white (VSR 901) – light grey (VSR 904) – medium grey (VSR 130) Other colours on request
Bottom rail	Clear-anodized aluminium
Guide system	Plastic-sheathed guide cords, black
Ladder tape for tilting	Kevlar-reinforced, black
Drive	230 V / 50 Hz, 2 limit switches
Wind resistance class	4
Accessories	Wind and solar sensors, various controls

Limit dimensions	hl	+ hs'
Opening + header heights	600–1000 mm 1001–1500 mm 1501–2000 mm 2001–2500 mm 2501–3000 mm 3001–3500 mm 3501–4000 mm	+ 195 mm + 210 mm + 220 mm + 235 mm + 250 mm + 265 mm + 275 mm
Maximum	12 m^2	
Note	hs' = hs (Griesser) + 35 mm (constant)	
Width (bk)	800–3000 mm	

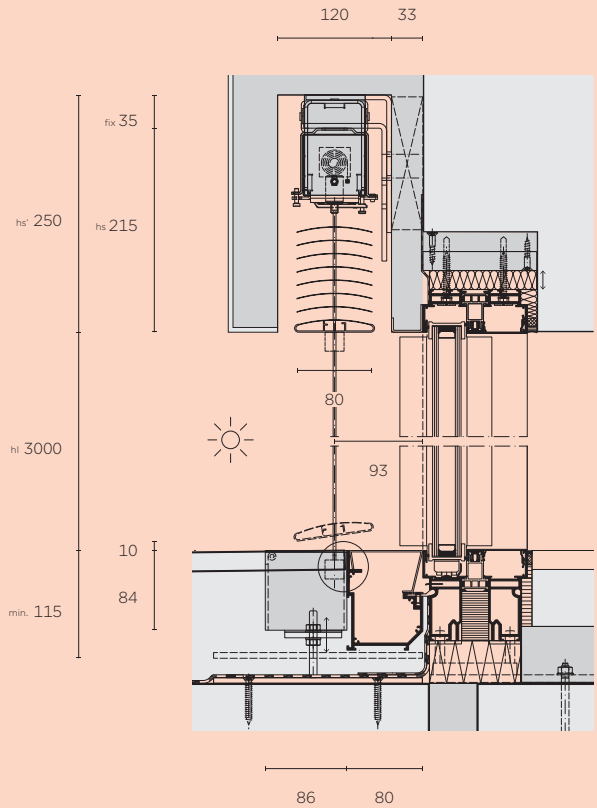
Extras
Sky-Frame Sun on request

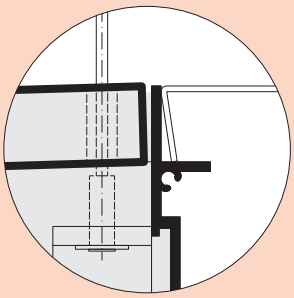
Horizontal section
Side wall junctions (scale 1:8)



Vertical section
Floor and ceiling junctions (scale 1:8)

(scale 1:2)





SKY-FRAME AUTOMATION

FEATURE

The electric drive allows simple and virtually noiseless operation of the sliding elements at the press of a button. The drive is concealed in the ceiling section and allows the window fronts to move automatically.

SKY-FRAME GUARD

FEATURE

Thanks to the adhesive bond between insulating glass assembly and GRP sections, and the multipoint locking system, even the standard Sky-Frame model offers outstanding burglar resistance. Various additional components can be fitted to the sliding windows to meet special security requirements.

Electronic components
– Position monitoring (leaf)
– Deadbolt monitoring (lock)
– Glass breakage sensor (alarm loop)
These three security parameters can be electronically monitored by alarm sensors concealed in the section and the status information transmitted to a burglar alarm system.

Mechanical components
– Laminated safety glass (P4A*)
– Additional hardware
The system was tested by ift Rosenheim and was shown to comply with the following burglar resistance class: RC2 (WK2), (EN 1628, 1629, 1630/EN 1627)

Special information
The burglar resistance class RC2 is only available for Sky-Frame 2 and 3.

* Please note country-specific requirements

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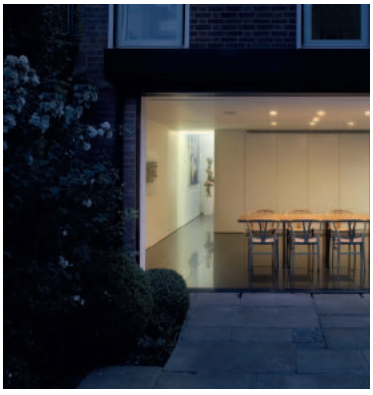

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1 + 2 Wohnhaus Freundorf, Austria. Architecture: Project A01, Austria. **3 VitraHaus, Germany.** Architecture: Herzog & de Meuron, Switzerland.
4 Villa in Utrecht, Netherlands. Architecture: Aas / Thaulow, Norway. **5 Penthouse in New York, USA.** Architecture: UNStudio, Netherlands.
6 Haus G, Germany. Architecture: ATP Sphere, Netherlands. **7 Villa Kavel 01, Netherlands.** Architecture: Studioninedots, Netherlands.
8 2 verandas, Switzerland. Architecture: Gus Wüstemann, Switzerland, Spain. **9 Townhouse in London, UK.** Architecture: Found Associates, UK.

Head Office
Sky-Frame Switzerland
www.sky-frame.ch

Sky-Frame locations
Germany, Frankfurt
Italy, Milan
USA, Los Angeles

Sky-Frame installers
Australia
Austria
Belgium
Canada
Czech Republic
Croatia
Denmark
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Monaco
Netherlands
Norway
Poland
Russia
Singapore
Slovenia
Slovakia
South Africa
Spain
Sweden
Switzerland
Ukraine
United Kingdom
USA

For further details, please visit our website:
www.sky-frame.ch

Architecture
ATP Sphere, Austria (page 8)
Stephan Maria Lang, Germany (page 5)
Lawrence & Long Architects, UK (page 22)
M3 Architects, UK (page 42)
Tec Architecture, Switzerland (page 30)
Architetti Tibiletti Associati, Switzerland (page 34)
Yiangou Architects, UK (page 40)
Luke Zuber, UK (page 3)

Concept and Design
New Identity Ltd., Switzerland

Text
Jung von Matt / Public Relations, Switzerland

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Iwan Baan, Netherlands (page 44, no. 5)
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M3 Architects, UK (page 42)
George Sharman, UK (page 22)
Mel Yates, UK (page 3)

SKY-FRAME

A VIEW,
NOT A
WINDOW.