

minimal windows®



MAXIMUM VIEW







The frameless sliding and fixed window system KELLER minimal windows® captivates by slim profile geometry and flush-fitted floors, ceiling and walls installation. It creates a seamless transition from inside to outdoors. The living spaces thus created enjoy maximum incidence of light.

Architects, planners and clients can enjoy the wealth of design opportunities offered by this premium modular system.

Our engineers pay the closest attention to the finest details of design and perfection. We use the highest-quality materials, state-of-the-art production processes, innovative ideas and the valuable craft skills of our employees.





#DESIGN

DESIGN



#Frameless

The frame profile is pared down to a minimum dimension of 38 mm to allow seamless integration into the floor, ceiling and walls. All you see are the slender 21 or 26 mm leaf profiles. A glass proportion of up to 98 % guarantees unhindered incidence of light.

#Large-scale

Sliding doors up to 12 m² and fixed windows of up to 18 m² can be achieved. The maximum overall height for sliding doors is 4.5 m (up to 6 m custom-made products on request).

#Modular

The huge variety of practical configuration variants covers all requirements. You can have up to four-track sliding systems in combination with fixed lights or interior / exterior corners with no distracting posts.

#Individual

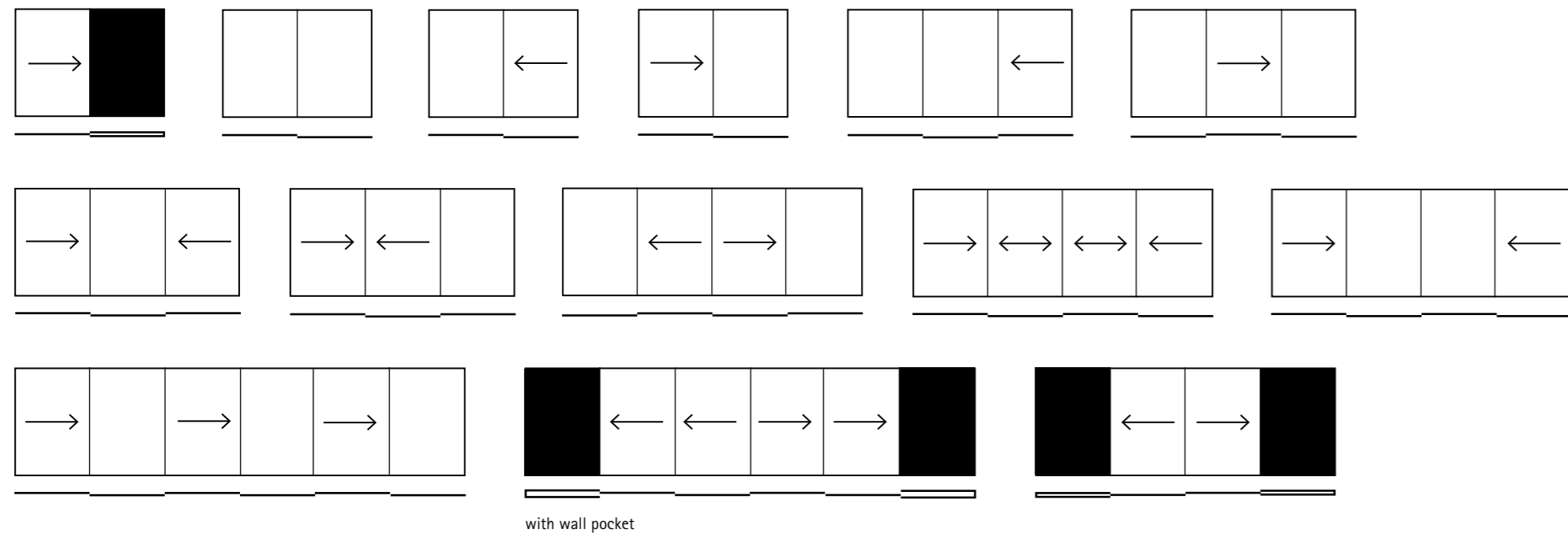
Choose from an extensive selection of RAL or anodised colours and stainless steel finish. The minimalistic aluminium profiles can thus be optimally and individually matched to the property. Glass facades can be created to suit any environment.



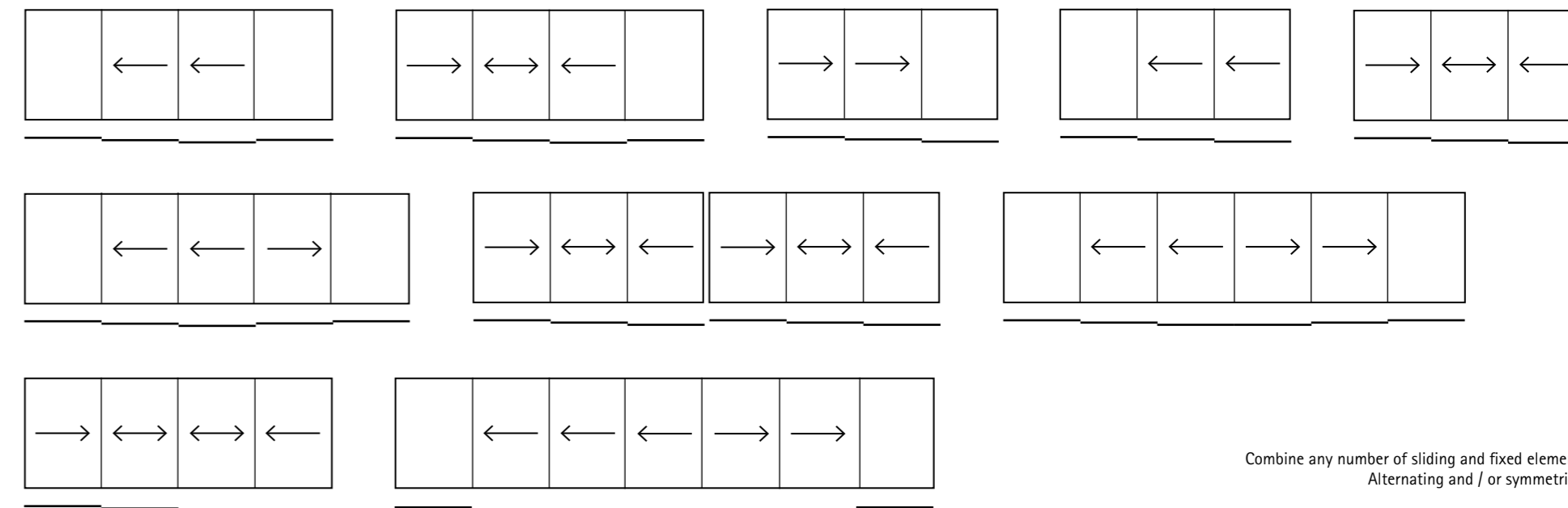
Architect: Tea Horvat & Radovan Šobat (Log Urbis), Photographer: © Rovert Leš



Examples of 1- and 2-track opening methods



Examples of 3- and 4-track opening methods



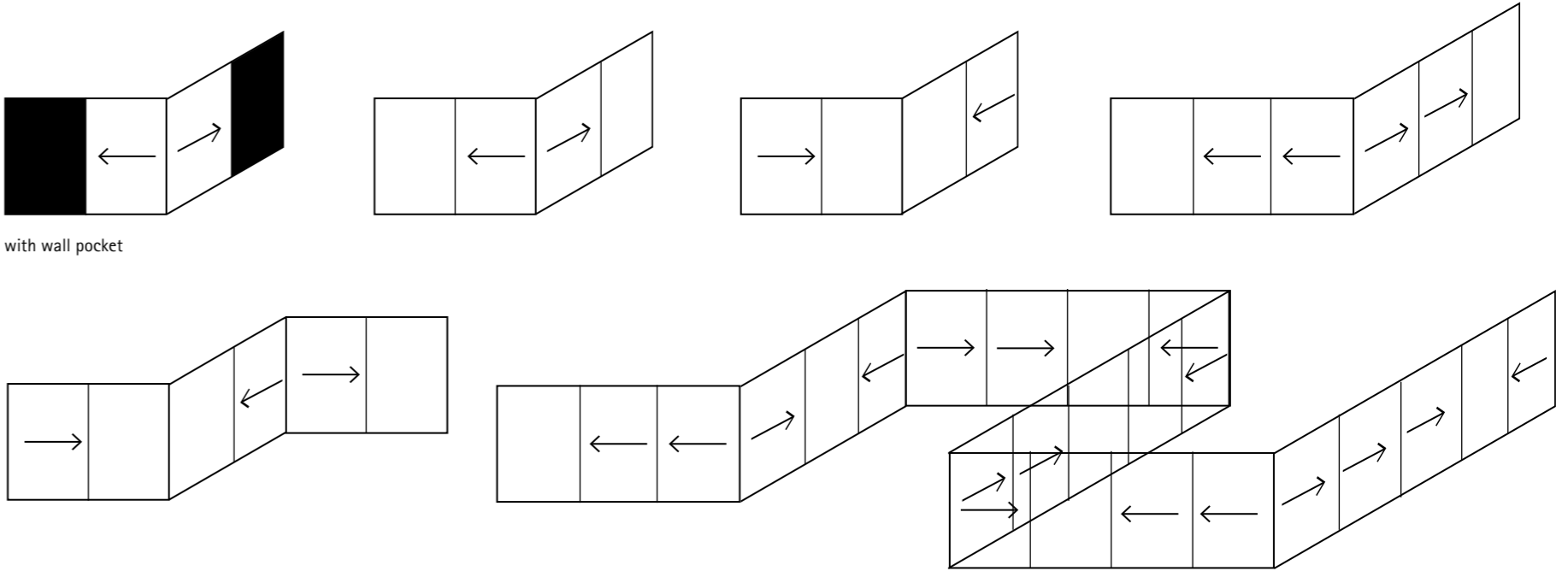
Combine any number of sliding and fixed elements.
Alternating and / or symmetrical.



DESIGN

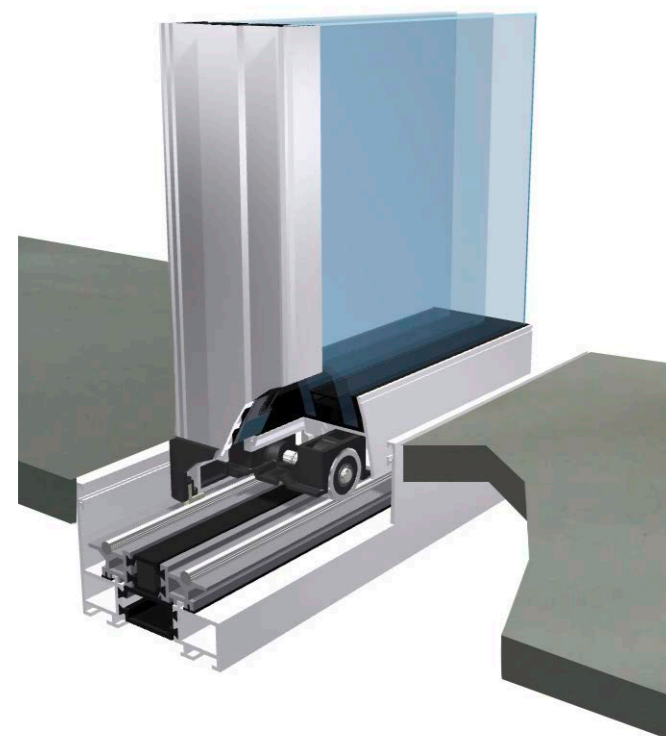
Arrangement variants

Internal and external post-free corners





#SYSTEM



#Stainless steel sliding rail

The stainless steel sliding rail recessed into the lower frame profile guarantees easy-action, silent opening and closing of the transparent elements.

#Roller carriage

The self-centring, integrated roller carriage is concealed in the lower profile of the sliding leaf. High-quality stainless steel rollers ensure high load-stability and easy action in daily use for leaf weights of anything up to 1000 kg.

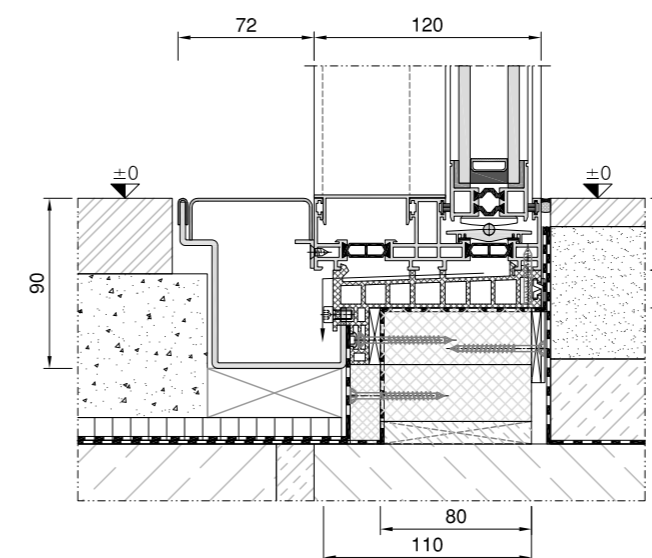


Illustration shows a possible design variant

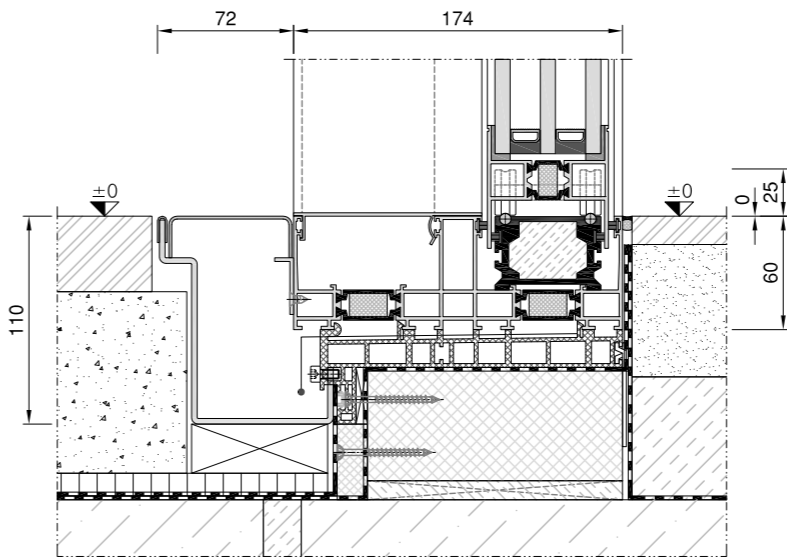
#Fitted flush to floor

The outer frame can be recessed around the whole perimeter into the walls, the ceiling and the floor. It creates a threshold-free transition from indoors to out. The floor profile with the integrated stainless steel sliding rail is on a level with the floor, easy to care for and maintenance-free.

#Drainage

Controlled drainage is achieved via a specially-designed system-integrated PVC hollow chamber drainage profile below the aluminium frame or optionally via a concealed system drainage gutter with stainless steel cover. The drainage profile has locating grooves for the EPDM film connection.

SYSTEM



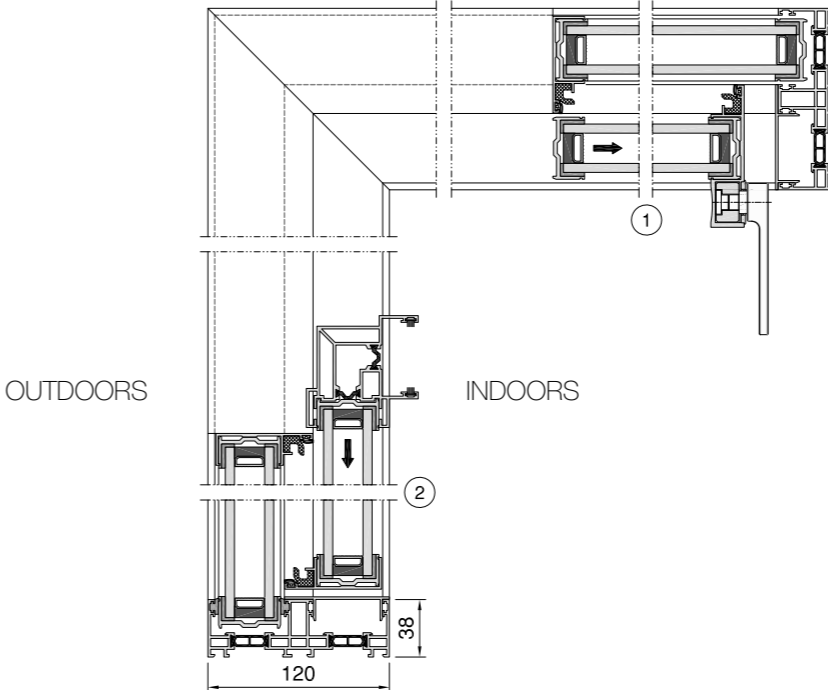
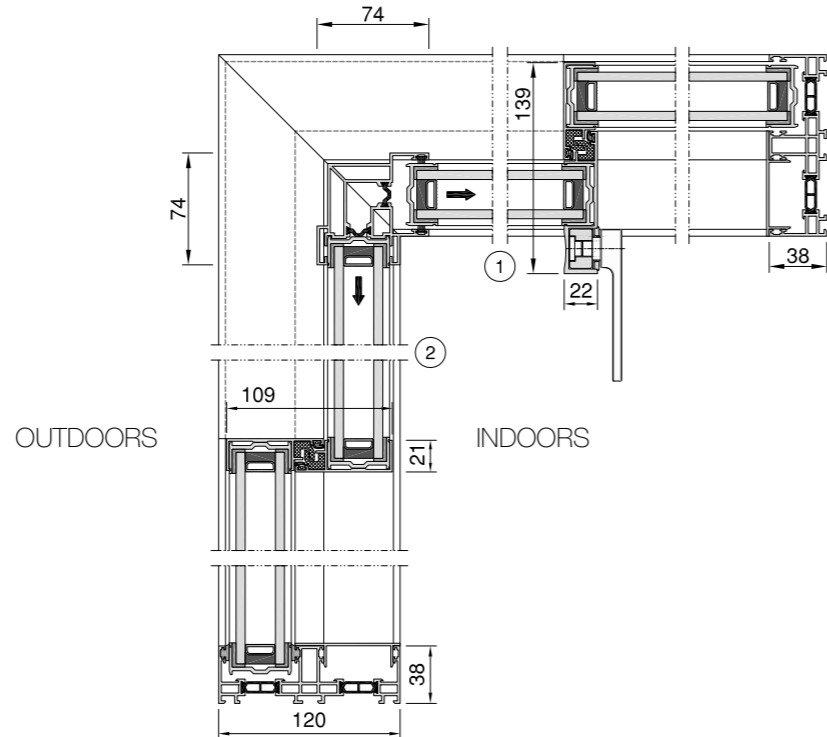
#Barrier-free

The use of the flush leveled minimal windows® freeway sliding rail guarantees accessibility entirely without thresholds. Thanks to the outer frame perfectly integrated in the floor and the sliding rail elevated precisely to floor level, there is no annoying floor depression. The level installation makes for a seamless transition from indoors to outdoors.

The barrier-free design offers an obstacle-free, virtually even transition that differs markedly from conventional systems with surface-mounted door frames or deep thresholds. The flush-with-the-floor system variants have been developed for both minimal windows® product lines.

Illustration shows a possible design variant

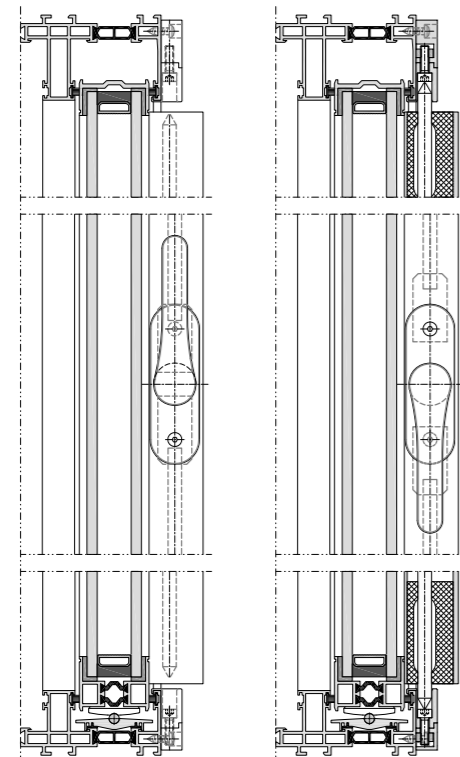
SYSTEM



#Corner-post-free

Architecture needs space and flexibility. KELLER minimal windows® offer both in terms of configuration options and connection flexibility. The design sliding window system allows 1-, 2-, 3- and 4-track sliding and fixed window installations, uninterrupted inside and outside corner solutions with no posts and concealed pocket wall solutions.

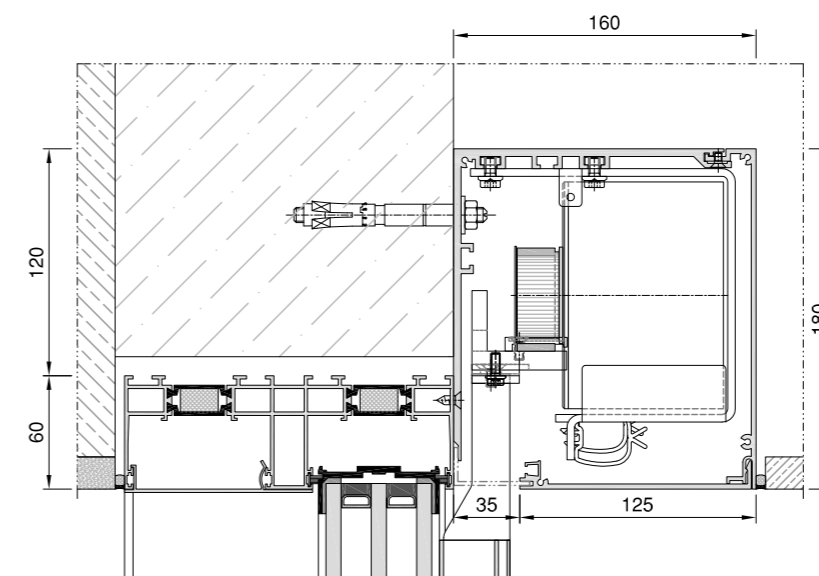
Illustration shows a possible design variant



#Manual locking

The multipoint locking is concealed inside the handle, double vent or junction profile of the sliding leaf. Actuation takes place via an elegant design lever with or without cylinder lock.

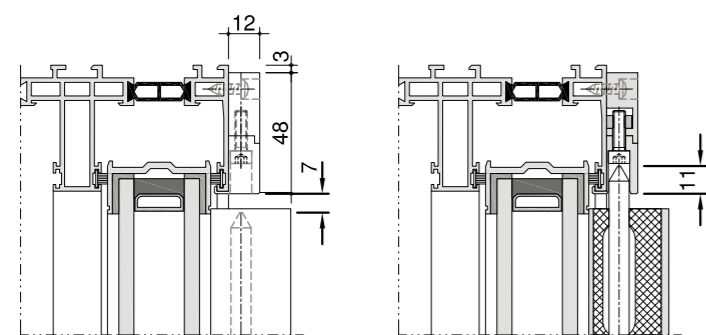
Illustration shows a possible design variant



#Motors / E-lock

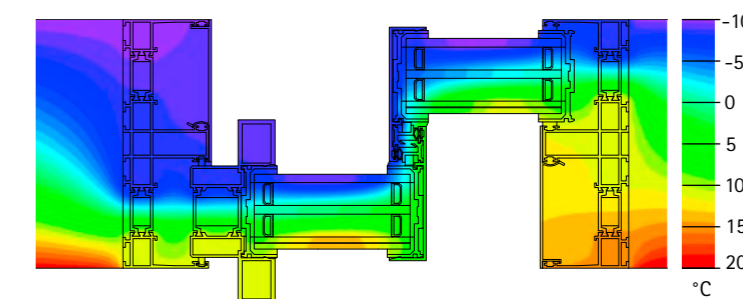
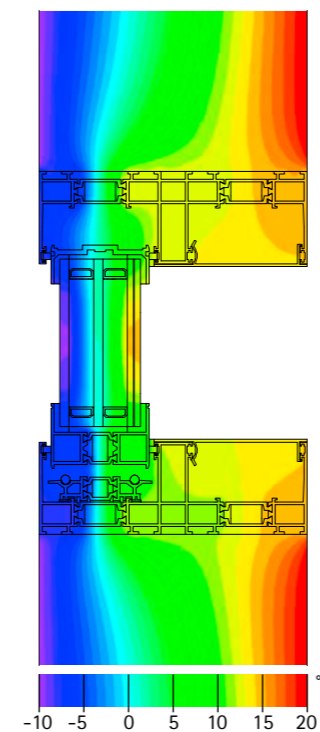
According to the individual system configuration, concealed electric drives and locks can be used to increase operating comfort. Automatic locking (Remote Control, home automation adaptation) and manual locking options (deadman-lock via wall switch) are available. A single motor with V-belt can operate several sliding leaves with a combined weight of up to 2000 kg silently. This allows the telescopic-opening of wide expanses of glass façades.

SYSTEM



#Security

The multi-point locking system offers burglar resistance and is approved according to burglary protection class RC 2. For added security the system can be fitted with an integrated opening and locking monitoring and connected to standard external monitoring systems.

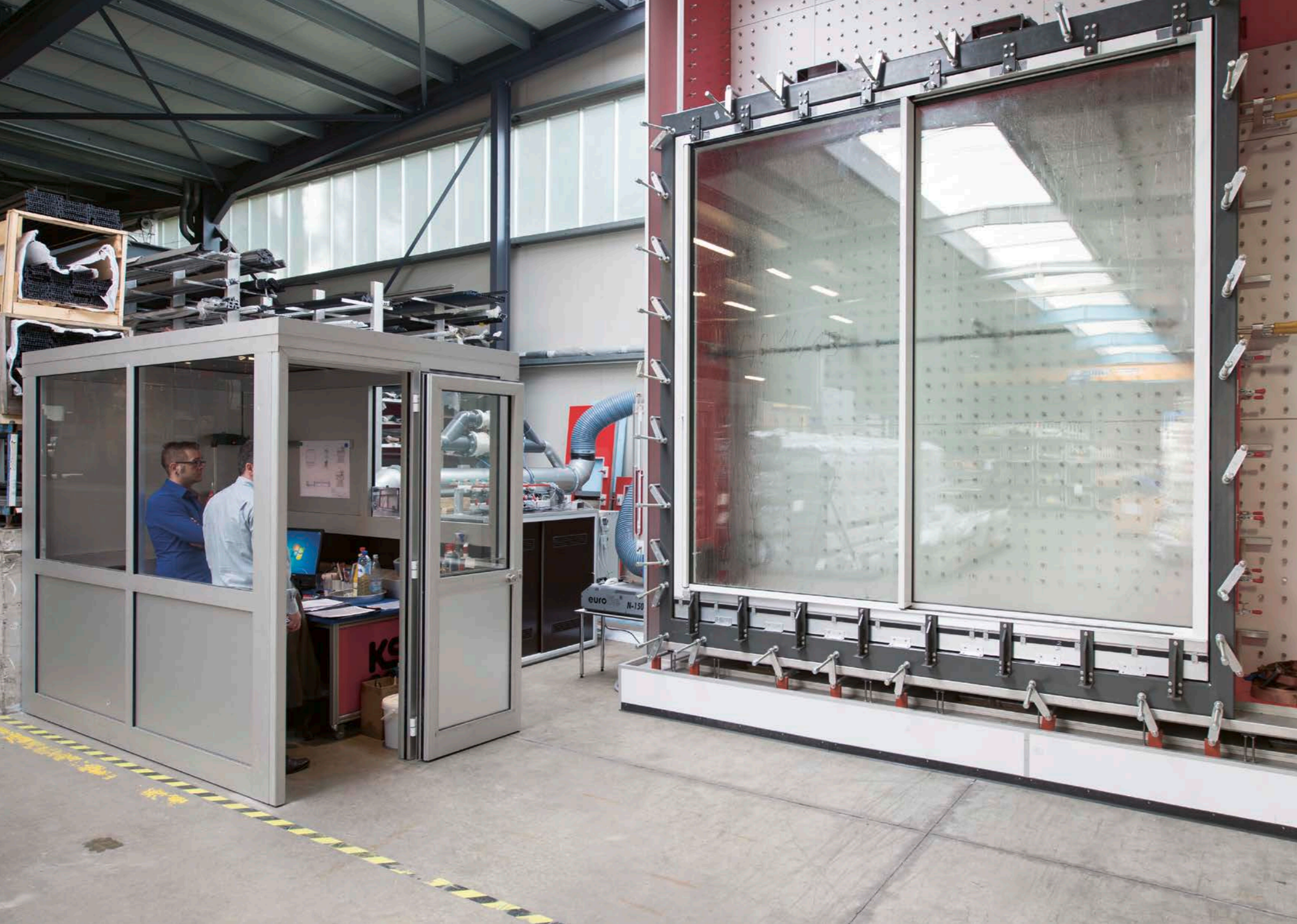


#Energy

The premium KELLER minimal windows®4+ series for triple glazing has uninterrupted thermal insulation. The system is ideal for passive house construction when using high-quality insulation glazing.

MINERGIE

SYSTEM



PRÜFBERICHT	
	
Nr. 40-16/15	
1. Auftraggeber und Hersteller	Keller AG / SA L-9911 Troisvierges
2. Bezeichnung des Prüfgegenstandes	2-fg. Schiebefenster (Schiebe-Fest) mit Drainageunterbau minimal windows® 4+
3. Prüfauftrag / Prüfgrundlage und Prüfergebnis	Nachweis der Leistungseigenschaften gemäß EN 14355-1: - Luftdichtheitsklasse gemäß EN 1026/12207 Klasse 4 - Schlagregenschichtigkeit gemäß EN 1027/12208 Klasse E1050 - Widerstand bei Windlast gemäß EN 12211/12210 Klasse C5
4. Datum der Prüfung	26. März 2015
5. Ort der Prüfung	Keller AG / SA 38 - 40, route de Wilwerdange L-9911 Troisvierges / Luxembourg
6. Datum des Prüfberichtes	06. Mai 2015
7. Umfang des Prüfberichtes	1 Seite Deckblatt 28 Seiten Anlagen
8. Zusatzbedingungen zu diesem Prüfbericht	1. Es gelten unsere Geschäftsbedingungen 2. Die Prüfergebnisse beziehen sich nur auf den geprüften Prüfgegenstand (Nr. 2) 3. Der Prüfbericht darf nicht verändert und nur als Ganzes veröffentlicht werden.
9. Unterschrift	   S. Claessen Prüftechniker
<small> Akkreditierte Prüfstelle nach DIN EN ISO/IEC 17025 Akkreditierte Zertifizierungsstelle nach DIN EN ISO/IEC 17065 PIV, Überwachungs- und Zertifizierungsstelle nach dem Regelwerk des BSIUK PIV, Prüfstelle für Schall- und Beschleunigung nach BAU-REG 102/027 / 2 Beschleunigung- und Zitterbewegungen nach DIN EN ISO 10816-3:2010 Beschleunigung für Fahrzeugrollen (je nach CECCO) gemäss BSIUK. </small>	
	

#Certification

The quality of the system meets the highest requirements - 'Made in Luxembourg' - and guarantees maximum protection against driving rain, wind loads, air permeability, noise penetration. All new designs and systems meet high quality standards and correspond to the latest state of the art techniques.





#PRODUCT

PRODUCT

minimal windows®

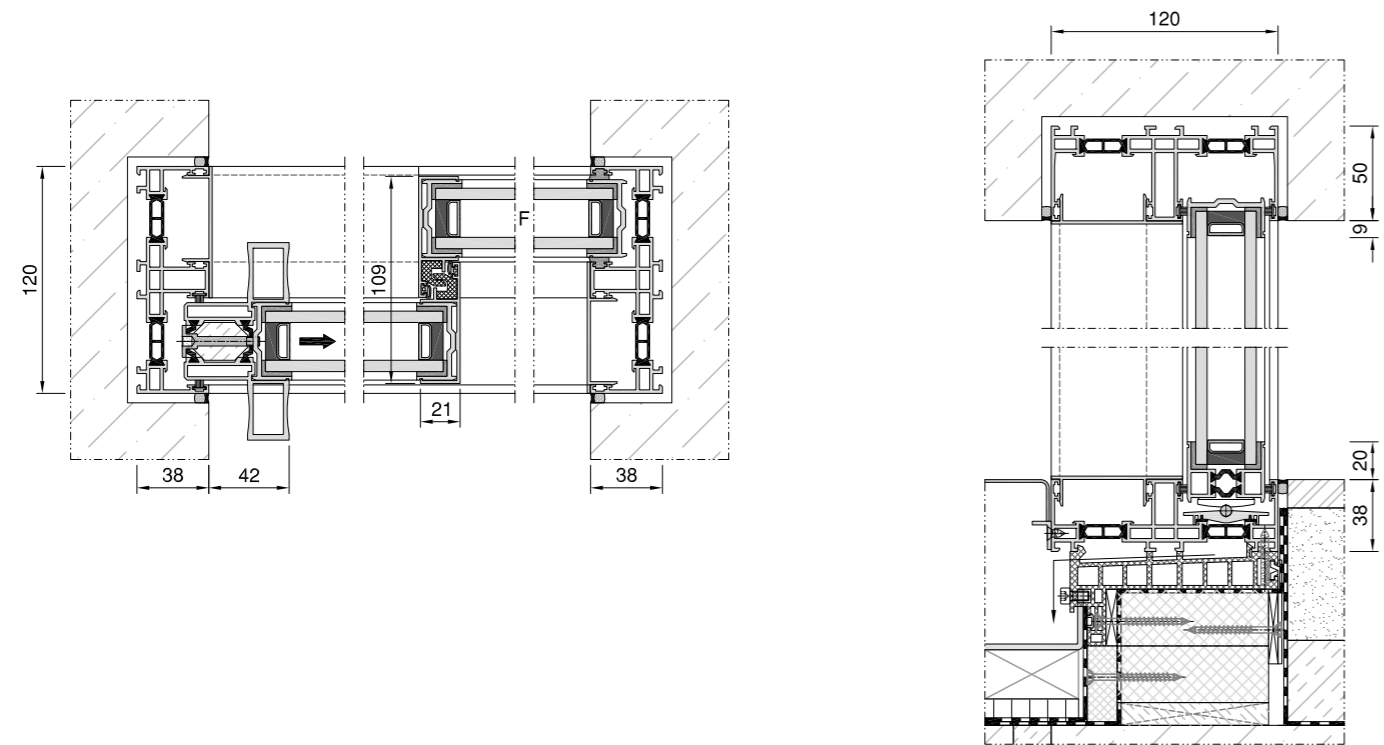


#minimal windows®

KELLER minimal windows® is a practically frameless, extremely easy-action sliding window system with a minimalistic facing width of the leaf profile of only 21 mm. The system features double insulation glazing in thermal separated aluminium frame profiles.

PRODUCT

minimal windows®



Facing width from centre point	21 mm
Maximum leaf size	up to 8.5 m ² / fixed light up to 18 m ²
Maximum leaf height	4 m
Maximum leaf weight	500 kg
Glass thickness	26 to 34 mm (insulating double glazing or Heat Mirror® glass)
Thermal transmission coefficient	$U_w \geq 1.1 \text{ W/(m}^2\text{K)}$ (depending on glass type & dimensions)
Motorisation	up to 1,500 kg total weight
Barrier-free accessibility	DIN 18040-1, DIN 18040-2
Air permeability	up to class 4 according to EN 12207
Driving rain tightness	up to class 7A according to EN 12208
Resistance to wind load	up to class C4/B5 according to EN 12210
Sound insulation	up to 39 dB achievable
Resistance to burglary	up to RC 2 according to EN 1627



PRODUCT

minimal windows®4+

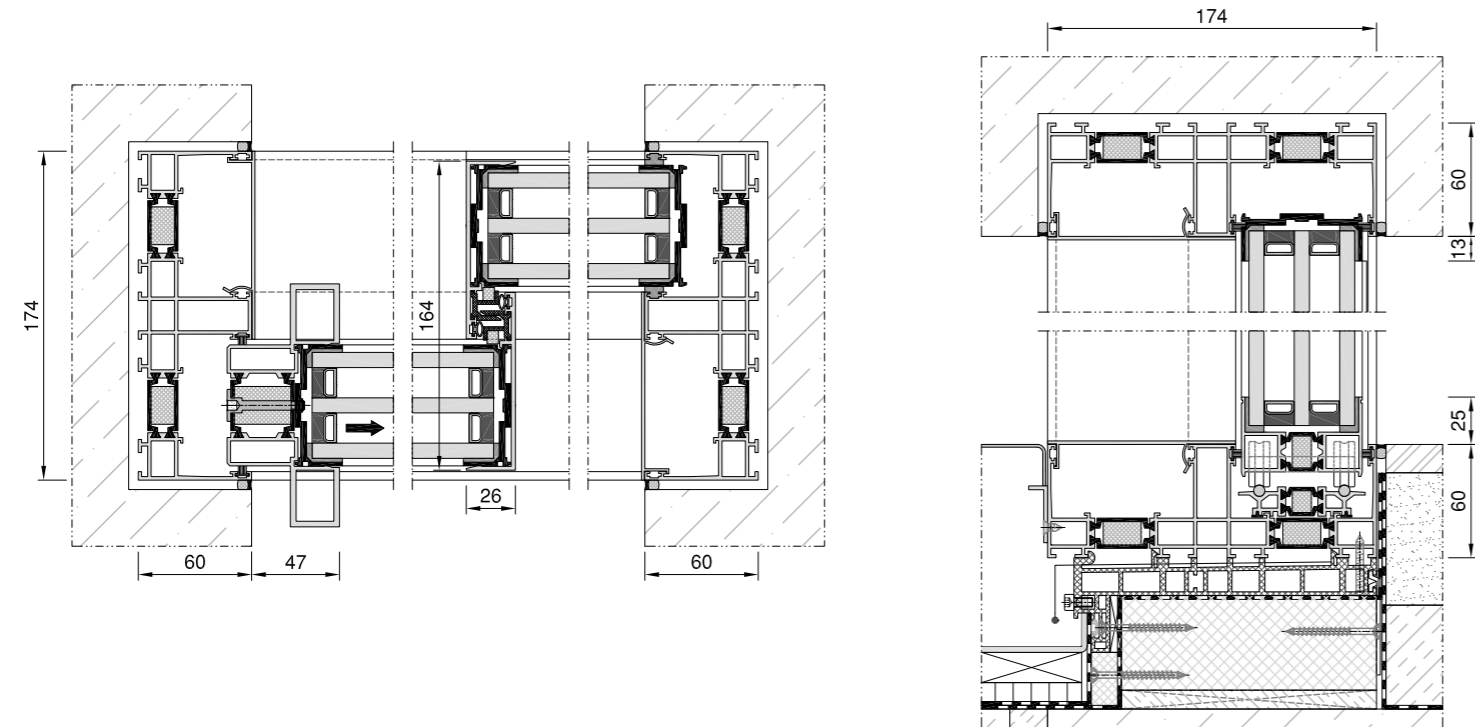


#minimal windows®4+

The premium version of the triple-glazed design sliding window is the most highly insulated variant and is the perfect solution for the passive house area. With high-quality insulated glass pane it is possible to achieve a U_w value of $\geq 0.70 \text{ W/m}^2\text{K}$.

PRODUCT

minimal windows®4+



Facing width from centre point	26 or 34 mm
Maximum leaf size	up to 12 m ² / fixed light up to 18 m ²
Maximum leaf height	4.5 m
Maximum leaf weight	1,000 kg
Glass thickness	50 to 56 mm (triple insulation glass or special glass types)
Thermal transmission coefficient	$U_w \geq 0.70 \text{ W/m}^2\text{K}$
Motorisation	up to 2,000 kg total weight
Barrier-free accessibility	DIN 18040-1, DIN 18040-2
Air permeability	up to class 4 according to EN 12207
Driving rain tightness	up to class E1050 according to EN 12208
Resistance to wind load	up to class C5 according to EN 12210
Sound insulation	up to 45 dB achievable
Resistance to burglary	up to RC 2 according to EN 1627



PRODUCT

minimal windows® highline

#minimal windows® highline

The innovative premium glass façade system combines aesthetics with outstanding performance features. The slender and frameless glass façades enhance the pure minimalism of current architecture. The glass façade between two structural floors comprises thermally insulated, concealed aluminium frame profiles and is ideal wherever minimum facing width and maximum glazing height is desired. The flush-mounted or symmetrically alternating offset planes of the glass façade can be combined with ultra-slender design sliding doors to give the perfect solution for high-rise residential projects and business premises. Available as double- or triple glazing versions.

Stability of the sliding system tested under extreme wind loads with a nominal load of 2,000 Pa (approx. 200 km/h) and a peak load of 3,000 Pa (approx. 250 km/h; with brief gusts of wind) in accordance with EN12210 and the classification C4/B5.

We distinguish 3 different design variants:

Type 1 - Glass-To-Glass, flush-surface glass façade with vertical 10 mm butt joint and SG bonding.

Type 2 - Semi-SG, flush-surface glass façade with vertical 20 mm butt joint outside and 22 mm design static profiles inside.

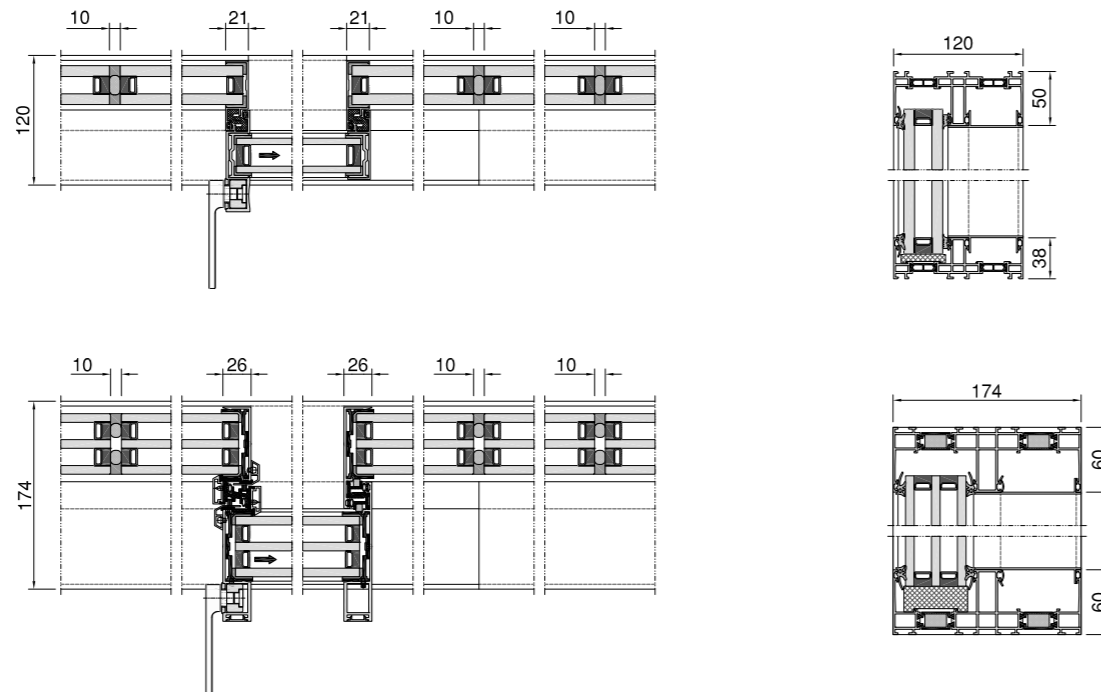
Type 3 - Cover-Cap-Look, flush-surface glass façade with 22 or 34 mm exterior cover in different design variants and vertical 22 or 34 mm design static profiles inside.

PRODUCT

minimal windows® highline

TYP 1 Glass-To-Glass

System glass façade between two floors made from insulated, concealed aluminium frame profiles and post-free glass-to-glass butt jointed implementation. The Glass-To-Glass variant (type 1) is designed as a **flush-surface glass façade**. Design sliding doors can be optionally fitted in the second inner track.



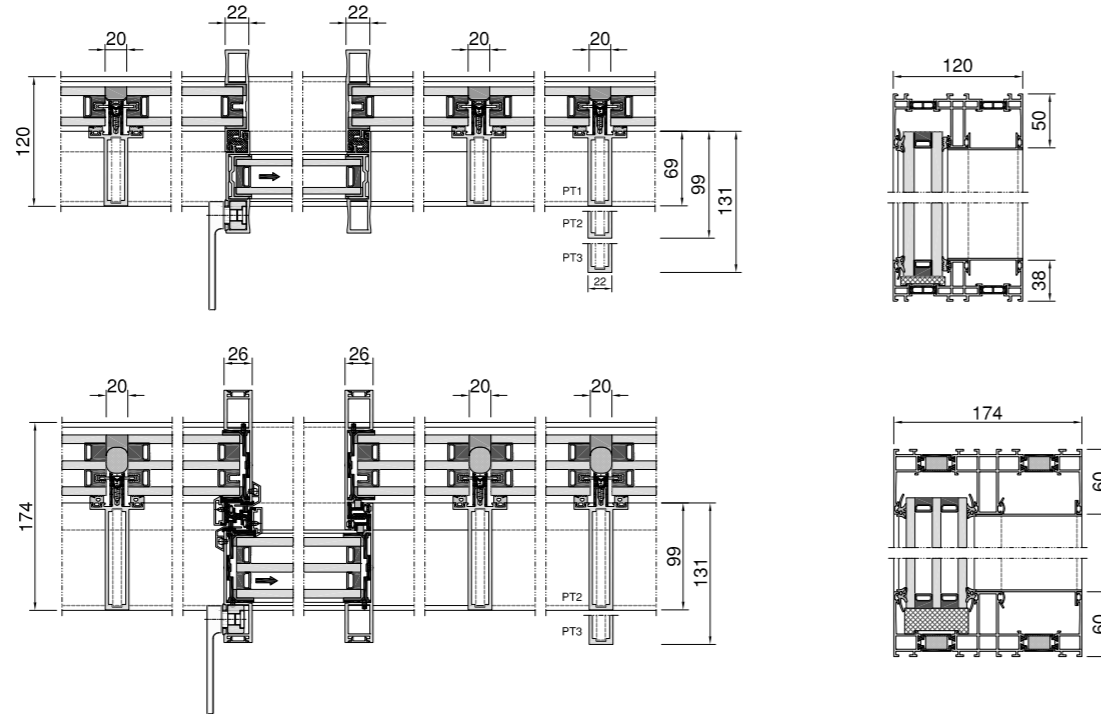
	minimal windows® highline	minimal windows®4+ highline
Facing width from centre point	vertical 10 mm butt joint with SG bonding	vertical 10 mm butt joint with SG bonding
Maximum leaf size	fixed lights with 12 m ² / sliding up to 6.5 m ²	fixed lights with 12 m ² / sliding up to 7 m ²
Maximum overall height	2.50 m	2.80 m
Maximum leaf weight	500 kg	650 kg
Glass thickness	fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass	56 mm, triple insulation glazing or special glass type
Thermal transmission coefficient	$U_w \geq 1.1 \text{ W/m}^2\text{K}$	$U_w \geq 0.70 \text{ W/m}^2\text{K}$
Motorisation	option: E-drive (in sliding door configuration)	option: E-drive (in sliding door configuration)
Barrier-free accessibility	DIN 18040-1, DIN 18040-2	DIN 18040-1, DIN 18040-2
Air permeability	up to class 4 according to EN 12207	up to class 4 according to EN 12207
Driving rain tightness	up to class 7A according to EN 12208	up to class E1050 according to EN 12208
Resistance to wind load	up to class C4/B5 according to EN 12210	up to class C5 according to EN 12210
Sound insulation	up to 39 dB achievable	up to 45 dB achievable
Resistance to burglary	up to RC 2 according to EN 1627	up to RC 2 according to EN 1627

PRODUCT

minimal windows® highline

TYP 2 Semi-SG

System glass façade between two floors made from insulated, concealed aluminium frame profiles. Minimalistic facing width of the vertical design post profiles of only 22 mm. The Semi-SG variant (type 2) is designed as a **flush-surface glass façade** in 2 tracks. Design sliding doors can be optionally fitted in the second inner track.



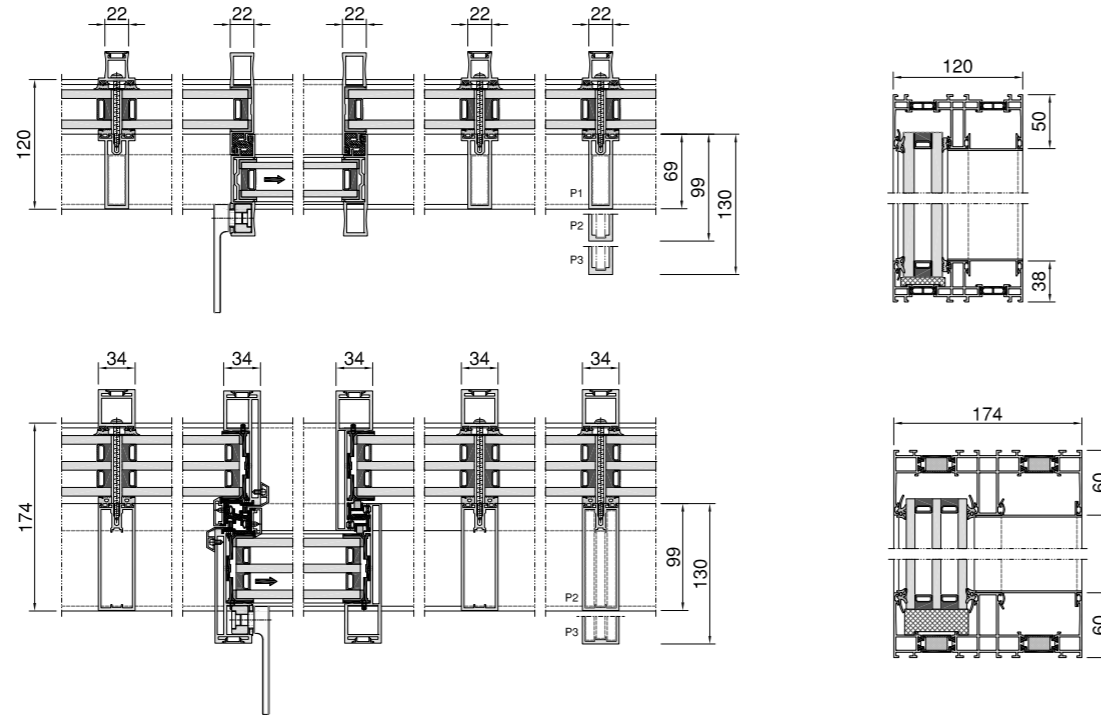
	minimal windows® highline	minimal windows®4+ highline
Facing width from centre point	vertical 20 mm butt joint outside, 22 mm static post inside	vertical 20 mm butt joint outside, 22 mm static post inside
Maximum leaf size	fixed lights with 18 m ² / sliding up to 8.5 m ²	fixed lights with 18 m ² / sliding up to 12 m ²
Maximum overall height	4.00 m	4.50 m
Maximum leaf weight	500 kg	1,000 kg
Glass thickness	fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass	56 mm, triple insulation glazing or special glass type
Thermal transmission coefficient	$U_w \geq 1.1 \text{ W/m}^2\text{K}$	$U_w \geq 0.70 \text{ W/m}^2\text{K}$
Motorisation	option: E-drive (in sliding door configuration)	option: E-drive (in sliding door configuration)
Barrier-free accessibility	DIN 18040-1, DIN 18040-2	DIN 18040-1, DIN 18040-2
Air permeability	up to class 4 according to EN 12207	up to class 4 according to EN 12207
Driving rain tightness	up to class 7A according to EN 12208	up to class E1050 according to EN 12208
Resistance to wind load	up to class C4/B5 according to EN 12210	up to class C5 according to EN 12210
Sound insulation	up to 39 dB achievable	up to 45 dB achievable
Resistance to burglary	up to RC 2 according to EN 1627	up to RC 2 according to EN 1627

PRODUCT

minimal windows® highline

TYP 3 Cover-Cap-Look

System glass façade between two floors made from insulated, concealed aluminium frame profiles. Minimalistic facing width of the vertical design post profiles of only 22 / 34 mm. The Cover-Cap-Look (Type 3) is designed as a **flush-surface glass façade** in 2 tracks. Design sliding doors can be optionally fitted in the inner track.



	minimal windows® highline	minimal windows®4+ highline
Facing width from centre point	exterior cover cap, 22 mm, 22 mm static post inside	exterior cover cap, 34 mm, 34 mm static post inside
Maximum leaf size	fixed lights with 18 m ² / sliding up to 8.5 m ²	fixed lights with 18 m ² / sliding up to 12 m ²
Maximum overall height	4.00 m	4.50 m
Maximum leaf weight	500 kg	1,000 kg
Glass thickness	fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass	56 mm, triple insulation glazing or special glass type
Thermal transmission coefficient	$U_w \geq 1.1 \text{ W/m}^2\text{K}$	$U_w \geq 0.70 \text{ W/m}^2\text{K}$
Motorisation	option: E-drive (in sliding door configuration)	option: E-drive (in sliding door configuration)
Barrier-free accessibility	DIN 18040-1, DIN 18040-2	DIN 18040-1, DIN 18040-2
Air permeability	up to class 4 according to EN 12207	up to class 4 according to EN 12207
Driving rain tightness	up to class 7A according to EN 12208	up to class E1050 according to EN 12208
Resistance to wind load	up to class C4/B5 according to EN 12210	up to class C5 according to EN 12210
Sound insulation	up to 39 dB achievable	up to 45 dB achievable
Resistance to burglary	up to RC 2 according to EN 1627	up to RC 2 according to EN 1627



PRODUCT

minimal windows® pivot

#minimal windows® pivot

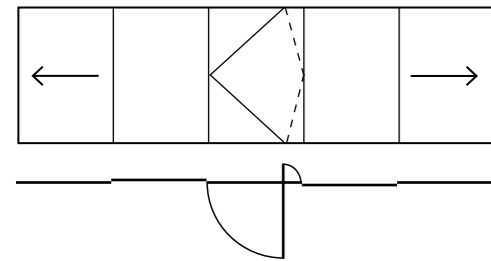
minimal windows® pivot are inward or outward-opening side-hung doors with pivot technology and the same minimalistic frame proportions.

This further highlight of the minimal windows® product range enables a further opening variant in the almost frameless design, which can be incorporated brilliantly in 8 different installation types. Where installation space is tight, the innovative rotary leaf hardware also allows many different adjustment options for positioning the rotary leaf axis.

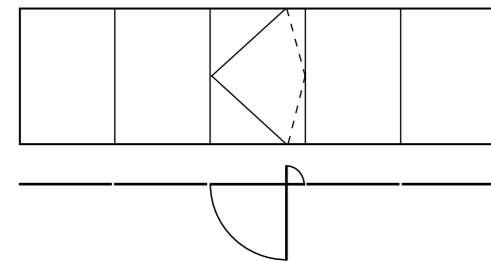
A great many of the largest sliding elements can be used. A virtually unlimited combination of sliding and pivoting leaf elements is designed in different tracks.

Arrangement variants

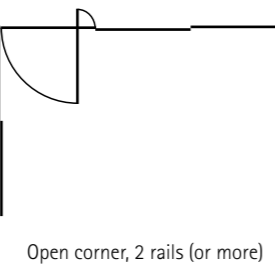
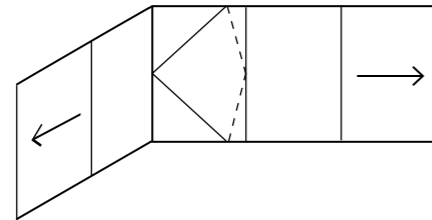
Opening outwards or inwards



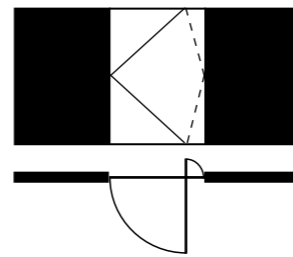
alternating, 3 rails (or more)



on 1 rail (minimal windows® highline)



Open corner, 2 rails (or more)



stand-alone (separate door)

Combine any number of sliding and fixed elements.
Alternating and / or symmetrical.

	minimal windows® pivot	minimal windows®4+ pivot
Maximum leaf dimensions	W = 1,800 mm x H = 3,000 mm	W = 1,800 mm x H = 3,000 mm
Maximum leaf weight	Wt = 250 kg	Wt = 350 kg
Minimum distance rotary leaf axis <->stop	150 mm	150 mm
Maximum distance rotary leaf axis <->stop	1/2 leaf width	1/2 leaf width
Horizontal adjustability of lower rotary bearing	+/- 3 mm	+/- 3 mm
Vertical adjustability of lower rotary bearing	+/- 3 mm	+/- 3 mm
Horizontal adjustability of upper rotary bearing	+/- 3 mm	+/- 3 mm
Vertical decoupling of upper rotary bearing<->leaf hinge part	Yes	Yes
Rotary leaf lock in 90° open position	Yes	Yes
Optional door closer and/or door opener, top	Yes	Yes



#ACCESSORIES

ACCESSORIES



#Glazing

KELLER AG supplies high-quality double and triple insulation glass (thermal insulation glass) with LowE-coating and outstanding thermal insulation values of this glass that reduce energy loss. The intermediate space between the panes is filled with Argon or Krypton.

Choose from float glass, LSG laminated safety glass from float, LSG insulation glass from TSG or TSG-glass or combinations thereof according to functional and static requirements.

All partners of the KELLER AG determine the thermal insulation values of the sliding system (U_w value) based on the insulation values of the glazing (U_g value) and glazing rim to the edge (Ψ value).

We supply the following special glass types:

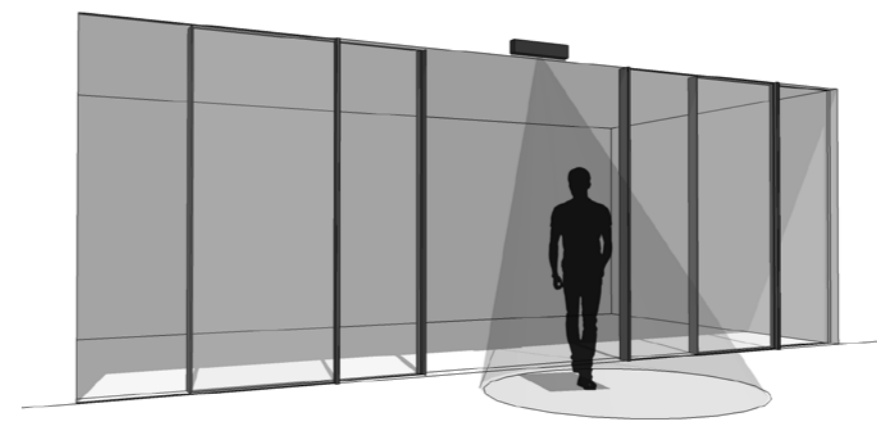
- HEAT MIRROR® sun-reflective glass
- From P4A on safety glass (anti-burglary glass)
- Noise insulation glass
- Bullet-resistant glass
- Privacy protection glass with or without sandblasting
- Decorative glass
- Solid glass corners - insulation glass
- Glass with controllable transparency (privacy glass)



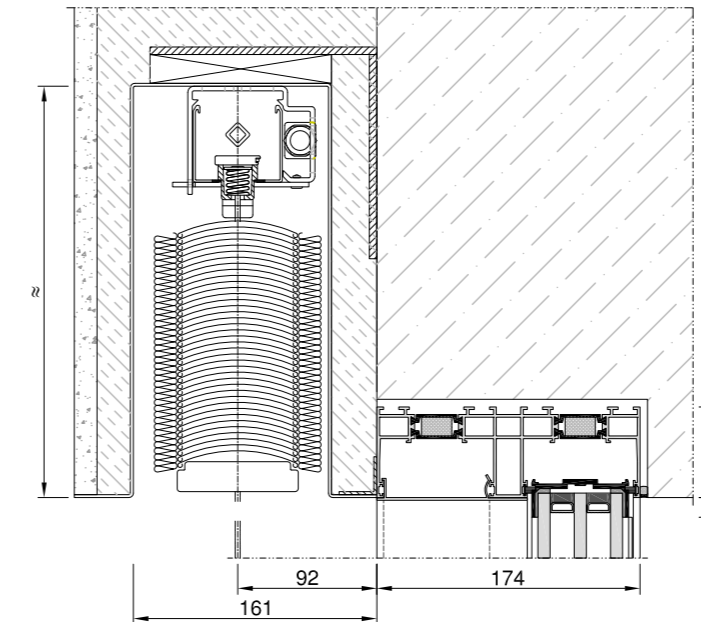
ACCESSORIES

#Safety accessories

Innovative and reliable. KELLER minimal windows® sliding systems are individually designed to customer preferences and installation circumstances. We therefore present a range of products and accessories to be able to offer intelligent and tailored solutions every time. Products such as linear actuators, opening and locking monitors (magnetic contacts), glass breakage sensors, opening and securing sensors, code switches, etc. complete our range of security accessories and offer enhanced safety.



ACCESSORIES



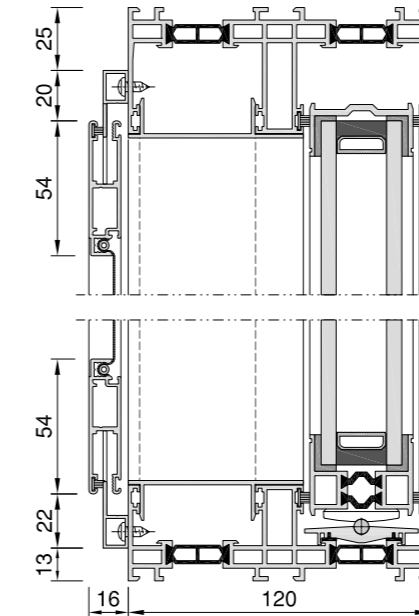
#Shading

Large glazed surfaces require appropriate shading methods to protect interiors from overheating. This actively reduces the requirement for cooling in the building and saves energy. Optimum protection is achieved by electronically controlled venetian blinds which are available in a huge range of colour variants.

Our extensive range of system-integrated sun-protection is designed for large dimensions and can be used even in extreme weather conditions. Venetian blinds can be adapted to suit the architecture perfectly and are a modern style accent for creative façade design. All materials are 100% corrosion-resistant.



ACCESSORIES



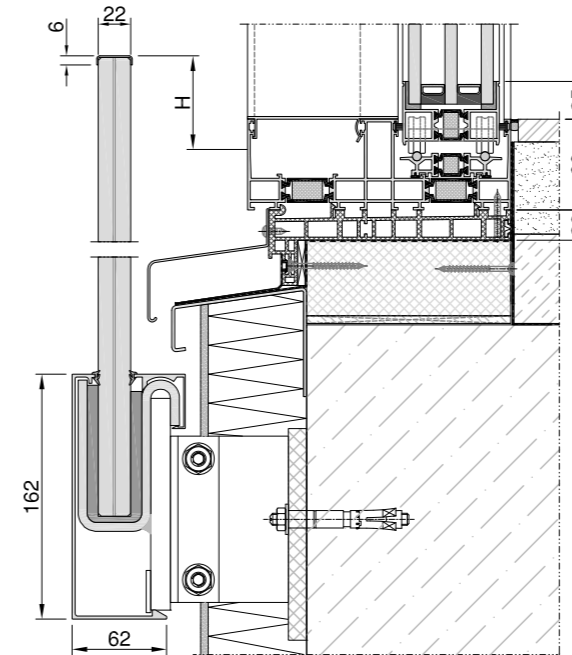
#Insect screens

Especially for large openings KELLER offers system-integrated, tailor-made insect screens for easy and long-term protection. Every installation is different. We use slender, sliding clamping frames with low mounting depth or insect screens that roll up vertically.

The almost-invisible screen is made of high-quality fabric which provides a practically unhindered view outdoors. The insect screen colour can be matched to the colour of the sliding leaf. The KELLER insect screen is discrete, stable and weatherproof.



ACCESSORIES



#Glass balustrades*

Customer demands for light-flooded interiors have given us floor-to-ceiling windows. In many building situations this also requires elegantly-designed fall protection. Key factors in construction are strength, stability and suitability of materials. KELLER glass balustrades meet the very highest quality and safety standards. Invisibly attached, they blend optimally into the overall architectural surroundings.

* Country-specific regulations should be observed





#Technology

Further information for architects and professional planners

<http://downloads.kellerag.com>*

* Requires prior registration

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