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

# 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.
Examples of 1- and 2-track opening methods

Examples of 3- and 4-track opening methods

DESIGN
Arrangement variants
DESIGN

Arrangement variants

Internal and external post-free corners

with wall pocket
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.

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.

Illustration shows a possible design variant.
The use of the flush leveled minimal window® barrier-free 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 surfacemounted door frames or deep thresholds.

The flush-with-the-floor system variants have been developed for both minimal window® product lines.
Architecture needs space and flexibility. KELLER corner 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.
**SYSTEM**

### 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 facades.
# Security
The multi-point locking system offers burglar resistance and is approved according to burglary protection class RC2 (WK2). 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.
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
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.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facing width from centre point</td>
<td>21 mm</td>
</tr>
<tr>
<td>Maximum leaf area</td>
<td>up to 85 m²</td>
</tr>
<tr>
<td>Maximum leaf height</td>
<td>4 m</td>
</tr>
<tr>
<td>Maximum leaf weight</td>
<td>500 kg</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>26 to 34 mm (insulating double glazing or Heat Mirror® glass)</td>
</tr>
<tr>
<td>Thermal transmission coefficient</td>
<td>Uₜ ≤ 1.1 W/(m²K) (depending on glass type &amp; dimensions)</td>
</tr>
<tr>
<td>Motorisation</td>
<td>up to 1,500 kg</td>
</tr>
<tr>
<td>Barrier-free accessibility</td>
<td>DIN 18040-1, DIN 18040-2</td>
</tr>
<tr>
<td>Air permeability</td>
<td>up to class 4 according to EN 12206</td>
</tr>
<tr>
<td>Driving rain tightness</td>
<td>up to class 7A according to EN 12208</td>
</tr>
<tr>
<td>Resistance to wind load</td>
<td>up to class C4B1 according to EN 12210</td>
</tr>
<tr>
<td>Sound insulation</td>
<td>up to 39 dB achievable</td>
</tr>
<tr>
<td>Resistance to burglary</td>
<td>up to RC 2 according to EN 1827</td>
</tr>
</tbody>
</table>
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 Uw value of ≥ 0.70 W/m²K.

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 Uw value of ≥ 0.70 W/m²K.
Facing width from centre point: 26 to 14 mm

Maximum leaf size: up to 12 m² / fixed light up to 18 m²

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 $U_r \leq 0.70 \text{ W/m}^2\text{K}$

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
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-slim 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.
System glass façade between two floors made from insulated, concealed aluminium frame profiles and post-free glass-to-glass 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.

**TYP 1 Glass-To-Glass**

### PRODUCT

#### Minimal Windows® Highline

- **Facing width from centre point**: vertical 10 mm butt joint with SG bonding
- **Maximum leaf size**: fixed lights with 12 m², sliding up to 6.5 m²
- **Maximum overall height**: 2.50 m
- **Maximum leaf weight**: 500 kg
- **Glass thickness**: fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass
- **Thermal transmission coefficient**: Uw ≥ 1.1 W/m²K
- **Motorisation option**: E-drive (in sliding door configuration)
- **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

#### Minimal Windows® 44 Highline

- **Facing width from centre point**: vertical 10 mm butt joint with SG bonding
- **Maximum leaf size**: fixed lights with 12 m², sliding up to 7 m²
- **Maximum overall height**: 2.80 m
- **Maximum leaf weight**: 650 kg
- **Glass thickness**: fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass
- **Thermal transmission coefficient**: Uw ≥ 0.70 W/m²K
- **Motorisation option**: E-drive (in sliding door configuration)
- **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 45 dB achievable
- **Resistance to burglary**: up to RC 2 according to EN 1627
**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.

### PRODUCT

**minimal windows® highline**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum leaf size</td>
<td>Fixed lights with 18 m² / sliding up to 8.5 m²</td>
</tr>
<tr>
<td>Maximum overall height</td>
<td>4.00 m</td>
</tr>
<tr>
<td>Maximum leaf weight</td>
<td>500 kg</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>Fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass</td>
</tr>
<tr>
<td>Thermal transmission coefficient</td>
<td>Uw ≥ 1.1 W/m²K</td>
</tr>
<tr>
<td>Sound insulation</td>
<td>up to 39 dB achievable</td>
</tr>
<tr>
<td>Resistance to wind load</td>
<td>up to class C4 according to EN 12208</td>
</tr>
<tr>
<td>Resistance to burglary</td>
<td>up to RC 2 according to EN 1627</td>
</tr>
<tr>
<td>Air permeability</td>
<td>up to class 4 according to EN 12207</td>
</tr>
<tr>
<td>Driving rain tightness</td>
<td>up to class 7A according to EN 12208</td>
</tr>
<tr>
<td>Motorisation option</td>
<td>E-drive (in sliding door configuration)</td>
</tr>
<tr>
<td>Barrier-free accessibility</td>
<td>DIN 18040-1, DIN 18040-2</td>
</tr>
<tr>
<td>Resistance to wind load</td>
<td>up to class C4 according to EN 12208</td>
</tr>
<tr>
<td>Sound insulation</td>
<td>up to 30 dB achievable</td>
</tr>
<tr>
<td>Heat transmittance coefficient</td>
<td>Uw ≥ 0.70 W/m²K</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>Fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass</td>
</tr>
<tr>
<td>Maximum leaf size</td>
<td>Fixed lights with 18 m² / sliding up to 12 m²</td>
</tr>
<tr>
<td>Maximum overall height</td>
<td>4.50 m</td>
</tr>
<tr>
<td>Maximum leaf weight</td>
<td>1,000 kg</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>Fixed light 36 mm, sliding leaf 34 mm, double insulation glazing or Heat Mirror® glass</td>
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<td>Thermal transmission coefficient</td>
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<td>DIN 18040-1, DIN 18040-2</td>
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<tr>
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</tr>
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</table>
System glass façade between two floors made from insulated, concealed aluminium frame profiles. Minimalistic facing widths 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**

- **System:** glass façade between two floors made from insulated, concealed aluminium frame profiles.
- **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 m² / sliding up to 8.5 m², fixed lights with 18 m² / sliding up to 12 m².
- **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 56 mm, triple insulation glazing or special glas type or Heat Mirror® glass.
- **Thermal transmission coefficient:** Uw ≥ 1.1 W/m²K / Uw ≥ 0.70 W/m²K.
- **Motorisation option:** E-drive (in sliding door configuration)
- **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® 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 m² / sliding up to 10 m².
  - **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.
  - **Thermal transmission coefficient:** Uw ≥ 1.1 W/m²K / Uw ≥ 0.70 W/m²K.
  - **Motorisation option:** E-drive (in sliding door configuration)
  - **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.
minimal windows® pivot

minimal windows® pivot are inward or outward-opening side-hung doors with pivot technology and the same minimalist 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, tracks on rail
- on 1 rail (minimal windows® highline)

Open corner, tracks on rail

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

**PRODUCT**

**minimal windows® pivot**

- Maximum leaf dimensions: W = 1,800 mm x H = 3,000 mm
- Maximum leaf weight: Wt = 250 kg
- Minimum distance rotary leaf axis to stop: 150 mm
- Maximum distance rotary leaf axis to stop: ½ leaf width
- Horizontal adjustability of lower rotary bearing: ±3 mm
- Vertical adjustability of lower rotary bearing: ±3 mm
- Horizontal adjustability of upper rotary bearing: ±3 mm
- Vertical decoupling of upper rotary bearing and leaf hinge part: Yes
- Rotary leaf lock in 90° open position: Yes
- Optional door closer and/or door opener, top: Yes

**minimal windows®4+ pivot**

- Maximum leaf dimensions: W = 1,800 mm x H = 3,000 mm
- Maximum leaf weight: Wt = 350 kg
- Minimum distance rotary leaf axis to stop: 150 mm
- Maximum distance rotary leaf axis to stop: ½ leaf width
- Horizontal adjustability of lower rotary bearing: ±3 mm
- Vertical adjustability of lower rotary bearing: ±3 mm
- Horizontal adjustability of upper rotary bearing: ±3 mm
- Vertical decoupling of upper rotary bearing and leaf hinge part: Yes
- Rotary leaf lock in 90° open position: Yes
- Optional door closer and/or door opener, top: Yes
KELLER AG supplies high-quality double and triple insulation glass (thermal insulation glass) with LowE-coating and outstanding thermal insulation values of the 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 (Uw value) based on the insulation values of the glazing (Ug value) and glazing rim to the edge (Ψ value).

We supply the following special glass types:

- HEAT MIRROR® sun-reflective glass
- 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)
Innovative and reliable KELLER minimal window® 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.
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 facade design. All materials are 100% corrosion-resistant.
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.
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
Further information for architects and professional planners

http://downloads.kellerag.com

* Requires prior registration
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