WINDOW TECHNOLOGY
DOOR TECHNOLOGY
AUTOMATIC ENTRANCE SYSTEMS
BUILDING MANAGEMENT SYSTEMS

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INFORMATION FOR PLANNERS AND ARCHITECTS

Barrier-free construction – Universal solutions for greater convenience

Securing technology for you

G-U BKS FERCO

Securing technology for you

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Those who wish to turn architectural visions into reality require the right technical solutions. This is particularly true when designing integral, standard-compliant and aesthetical systems for barrier-free construction. To achieve this, planners and building contractors rely on the Gretsch-Unitas group of companies: as one of the international market leaders for window and door technology as well as automatic entrance and building management systems, we are the competent partner for system solutions in all areas of barrier-free architecture. Our expertise is founded in the 100-year old tradition of our family-owned company, which has always stood for innovative power, progress and cost-effectiveness. In accordance with our guiding principle "Securing Technology for You", we support our customers all the way from planning right through to the implementation of barrier-free solutions, regardless of whether it concerns a new build, redevelopment or retrofit. We have put together a few examples of this here in this brochure – and there are many more options besides: get in touch with us and together we will find the right solution for you.

kab gmbh, Fellbach

The Gretsch-Unitas Group:
A traditional family-owned company
for more than 100 years

Securing technology for you

Whoever builds using barrier-free technology opens the door to the future.

The GU Group regards barrier-free construction as sustainable construction. This ensures lasting freedom of movement and comfort for every building user: today, tomorrow and the day after. By collaborating closely with architects, planners and developers, all-encompassing solutions that are perfectly tailored to the target groups and protection objectives can be found. In this case, comfortable operation goes hand in hand with appropriate aesthetics – an important basis for safeguarding the value of the building in the long term.

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What actually is barrier freedom?

Who benefits from barrier freedom? The answer is... all of us!

Today everybody is aware of the need for barrier free construction – particularly when it comes to building appropriate solutions for the elderly and disabled. The statistics for this in Germany speak for themselves: in 2020 around 30 percent of the population will be over 60. The number of persons with a disability is around 8.6 million, which is roughly one tenth of the population.

But who, when contemplating the topic of barrier freedom, thinks of parents with pushchairs, the shopper with heavy bags or athlete with leg in plaster? A door which is difficult to open also presents a real challenge for them.

GU Group therefore interprets the expression "barrier freedom" more broadly and systematically pursues the idea of offering maximum comfort for all users of the building.

Inclusion instead of exclusion

Suitable for wheelchair users, persons with impaired vision and the elderly: if barrier freedom is regarded as a special solution for a few persons, this implies marginalisation and even exclusion of these groups.

The principle of inclusion represents an alternative: it offers every person the opportunity to fully and equally participate in all social processes – right from the outset and irrespective of their individual abilities, ethnic and social background, gender and age.

Universal Design: one for all

The principle of inclusion means that universal solutions are required for everyone. The answer? Universal Design. The starting point is the view that the change to barrier freedom is a matter of course involving people of every generation and from all walks of life.

This ideology produces universal solutions that harmoniously combine comfort, barrier freedom and aesthetics – as do the products and systems of GU Group. This not only extends the range of potential users, but also increases the value of the building.

To ensure that as many people as possible are included, the two-sense principle should be observed at the planning stage. In other words, it should be possible to perceive all components with at least two senses (vision, hearing or tactile).

Person photos: Getty Images

The sustainable benefits of the Universal Design are most clearly evident when considered in relation to the life cycle of a person: every phase of life involves specific demands on barrier freedom.

The dignity of the person is the priority

Barrier freedom is not a luxury, it is a fundamental right which is embedded in German and European legislation. Behind this lies the core notion of making all areas of life accessible and usable in a manner which is commonly accepted, without difficulty and fundamentally without requiring external assistance. The legislation aims with this approach to give every person the opportunity to for as long as possible lead an extensively self-determining life without restrictions. The legal basis for this is the European Union Charter of Fundamental Rights:

- Article 1: "Human dignity is inviolable. It must be respected and protected."
- Article 21: "Discrimination due to (...) a disability or (...) age is prohibited."
- Article 26: "The union recognises and respects the right of persons with disabilities to measures that guarantee their independence, their social and professional integration and their participation in the life of the community."

These requirements are clearly defined in German legislation and in standards:

- Ban on discrimination and law on equal opportunities for disabled persons in the German constitution
- DIN 18040 1/2 as basis for the requirements for public buildings and apartments

As barrier freedom is a legal requirement, non-compliance constitutes a constructional defect. Anchoring in the Construction Products Regulation or the state building codes therefore also provides scope for financial and building legislative consequences.

Person photos: Getty Images

A consequence of the demographic change in Germany: by 2020 it is envisaged that a further 800,000 apartments will have been adapted to incorporate age-appropriate solutions.

Barrier-free system solutions

1 **Automatic sliding doors**
Ideal for barrier-free and prestigious entrances: automatic in-line sliding doors combine aesthetical design with contact-free access comfort without threshold. More information see page 10.

2 **Automatic swing doors**
No force required for opening and closing: automatic swing doors ensure freedom of movement and security in public buildings. More information see page 14.

3 **shop*Master GSW-M* all-glass sliding panel system**
Barrier freedom combined with variable use of space: when used as partition walls, all-glass sliding panels provide a high degree of flexibility. More information see page 18.

12 **Building management**
Central monitoring and control of windows and doors: adapted to the requirements of the building and seamlessly integrated into the overall facility management. More information see page 54.

11 **Control**
Comfort at the push of a button: when controlled via radio or remote control, doors and windows can be operated without applying any force whatsoever. More information see page 50.

Barrier-free from the underground car park to the roof terrace: in order to offer all building users optimum comfort, all components must work perfectly together. This is why the GU Group offers one-stop comprehensive solutions – from the door threshold through to the central building management system, from window hardware through to automated facade control systems.

4 **Project and interior doors**
Everything you need for comfortable door operation indoors: from manual operation through to fully-automated solutions.
More information see page 22.

5 **House and apartment entrance doors**
From entrance door to comfortable access zone: intelligent technology that fully satisfies the expectations of the occupants.
More information see page 26.

6 **Lift&Slide balcony-doors**
No more distinction between inside and outside: Lift&Slide balcony-doors are the comfortable transition between the living area and the outdoor environment.
More information see page 30.

7 **Balcony and patio doors**
Barrier-free patio and balcony-door solutions provide convenient access to fresh air. More information see page 24.

8 **Windows**
Maximum operating comfort for all frame materials and opening types: when it comes to barrier-free window solutions, the GU hardware world leaves nothing to be desired. More information see page 38.

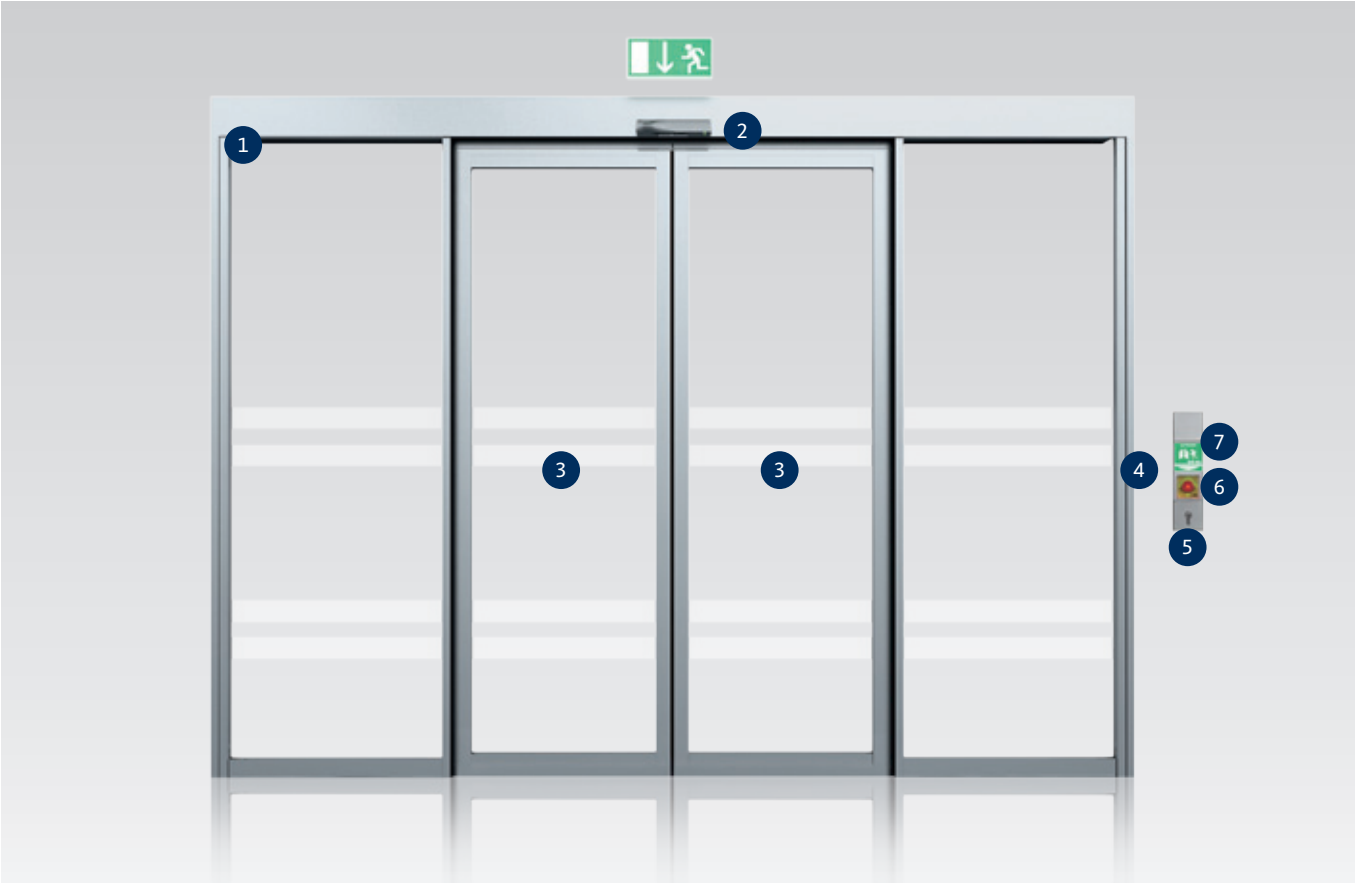
10 **Smoke and heat exhaust ventilation systems / natural smoke extraction and ventilation**
Uncompromising comfort, fire protection and aesthetics: intelligent solutions for daily in/out ventilation and for safe smoke extraction in the event of fire.
More information see page 46.

9 **Window solutions for facades**
Integral solutions for facades: barrier-free operating options create real added value for the property. More information see page 42.

More of an experience rather than just an entrance.

The entrance is the first impression the user has of a public building. So it is all the more important therefore to make this a positive experience and also satisfy the requirements for barrier freedom. GU Group automatic in-line sliding doors can do this. They combine aesthetical design with barrier-free access comfort: the doors open automatically via a radar motion sensor which guarantees fast, contact and threshold-free access. The innovative HM-F FT escape route sliding door also provides an intelligent escape route function: during nighttime operation the in-line sliding door becomes a swing door with escape door security. This means the escape route sliding door can be locked in compliance with the guidelines.

Automatic sliding doors



Suggested components

1. HM-F escape route sliding door drive
2. Radar motion sensor with safety light curtain to DIN 18650 and EN 16005
3. Hinged sliding panel
4. FTNT10 escape door control system
5. Key switch for authorised access / acknowledgement
6. Emergency push-button
7. Push-button for actuation in the Off / Night operation mode

Clever pairing: barrier-free in-line sliding door and escape door rolled into one product

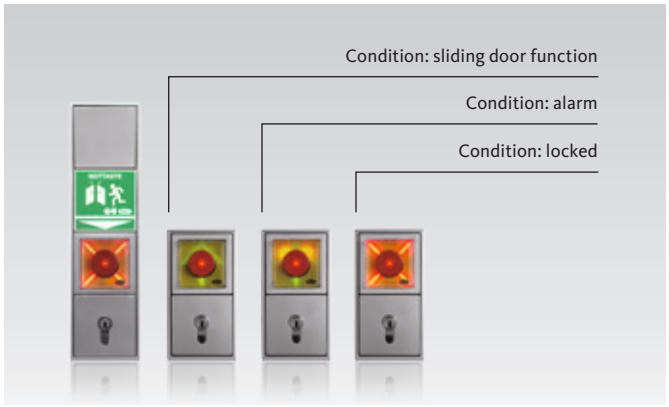
The HM-F FT escape route sliding door harmoniously combines barrier freedom, functionality and aesthetics: the radar motion sensor with infrared light curtain ensures contact-free opening and closing. The threshold-free transition guarantees easy pedestrian or wheelchair access. In addition to barrier-free comfort, HM-F FT functions as an escape door – also when locked. A separate escape door is therefore no longer required.

Convenient planning is also provided for: the HM-F FT is available as a single or double-leaf version and can be built flexibly to accommodate different passage widths. It can therefore offer individual solutions for barrier-free access. Additionally, with the type-tested system from the GU Group, approval by the building control authority is not required in individual cases – these are optimum prerequisites therefore for planning certainty and for a harmonious overall concept.

Radar motion sensor
The passage area of the in-line sliding door is safeguarded on both sides by a radar motion sensor with infrared light curtain. Contact during entry is therefore excluded. The radar motion sensor is deactivated during nighttime operation and the door can be opened by pressing the button.

Person photo: Getty Images

Passage without threshold
The threshold-free design affords effortless access by pedestrians and also allows wheelchairs or pushchairs, for example, to pass through easily.



FTNT10 escape door control unit
The FTNT10 escape door control system with innovative lighting concept monitors the door and securely releases it in an emergency via the integrated emergency switch. Further components are, in addition to the emergency push-button label, the ST10 key switch for short-term release for authorised access and for acknowledgement and a push-button for door control in the off/nighttime operation mode.

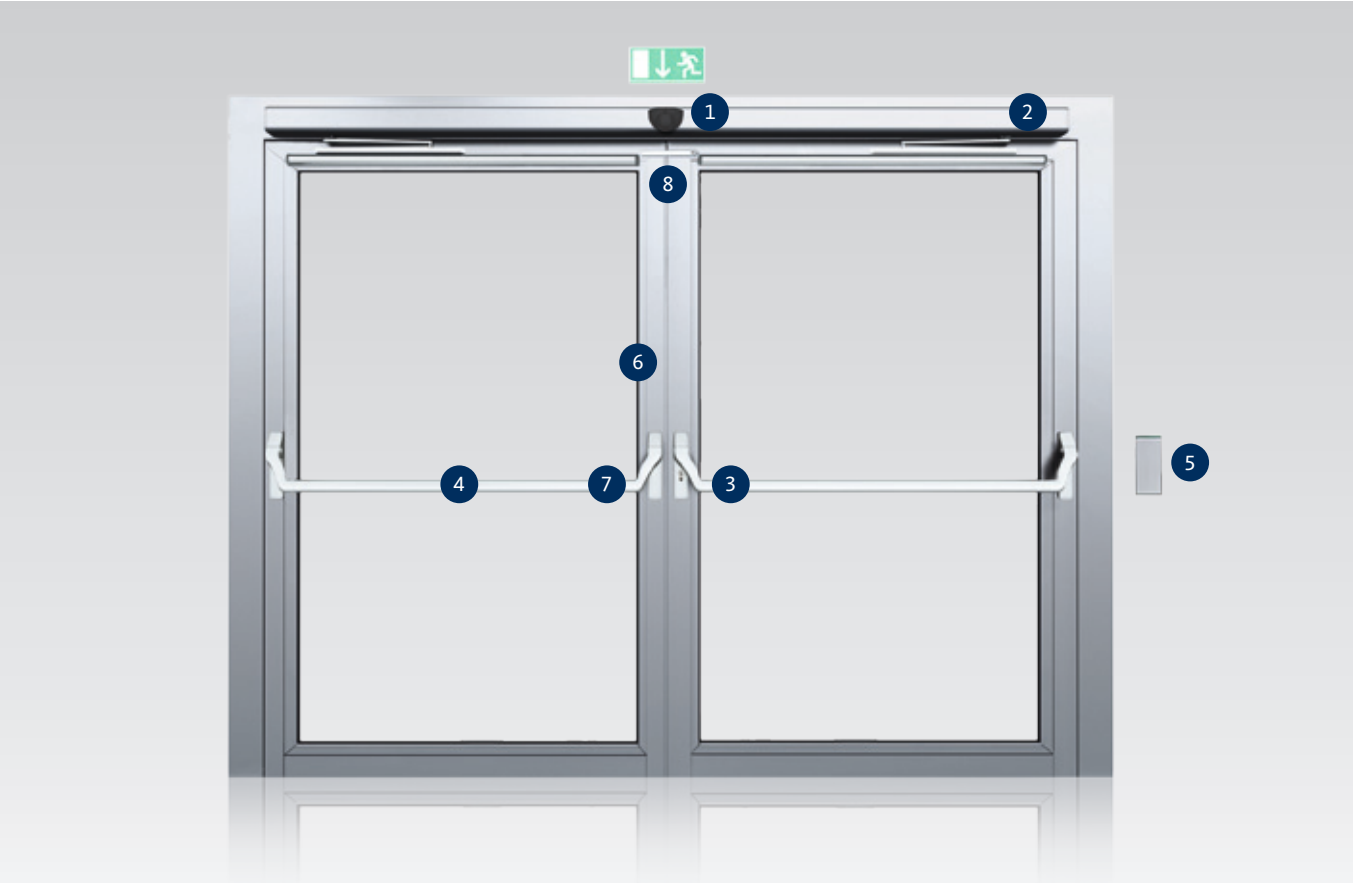
General planning tips

- To ensure optimum visibility, the element should contrast with its environment
- All-glass doors or glass walls on traffic routes must contrast visually by using safety markings, e. g. with strips at a height of 40 – 70 cm and 120 – 160 cm above FFL
- The clear passage width of ≥ 90 cm must be observed
- The requirements of the Machinery Directive apply

Paving the way to freedom of movement and safety.

Automatic closing of fire and smoke protection doors is desirable. However, a closed door represents an obstruction. Nevertheless, convenience and barrier freedom can only be ensured if the door is easy to open. Automatic swing-door drives from the GU Group ensure secure closure yet allow convenient access via the radar motion sensor, push-button or access control system. Entrance doors in the facade can also make use of the benefits of the swing-door drive: burglar protection and escape route safety can be ensured in addition to barrier freedom, when combined with multi-point locking.

Automatic swing doors



Suggested components

1. Radar motion sensor
2. DTR swing-door drive
3. Motor-driven lock 19 series
4. Push bar 7441
5. Flat push-button
6. Electric strike No. 6
7. Shoot-bolt lock 19 series
8. Carrier bar

Closes automatically – opens automatically

Whether fire and smoke protection doors, interior and exterior doors or facade doors: automatic opening and closing of swing doors ensures freedom of movement and security, especially in public buildings.

Barrier freedom is easy to achieve with swing door solutions from the GU Group: radar motion sensors and active infrared sensors on both sides ensure the door can be comfortably accessed without making contact with it. The passage area in this case can be designed without a threshold and therefore does not represent a tripping hazard.

The wide product range of the GU Group offers architects and planners a high degree of flexibility in this regard: the swing doors are available as single and double-leaf versions and are available in large passage widths. Barrier-free fire protection doors with widths of ≥ 95 cm and EN 4–6 closing force sizes can therefore be planned and built.

A further benefit: The swing-door drive is suitable for all frame materials and can also be retrofitted to existing elements.

DTR swing-door drive
For controlled opening without expenditure of energy: the GU Group door drives are entirely flexible when it comes to equipping doors made of timber, plastic or aluminium. And what's more, they are eminently suitable for retrofitting.

Passage without threshold
The design of the passage area without threshold ensures barrier-free pedestrian and wheelchair access.

Motor-driven lock 19 series
The 19 series motor-driven lock is a self-locking system with panic function and is ideally suited for use in automatic swing doors with fire protection, smoke protection and escape door function. Mechanical unlocking is possible at any time using a key and lever handle or push bar.

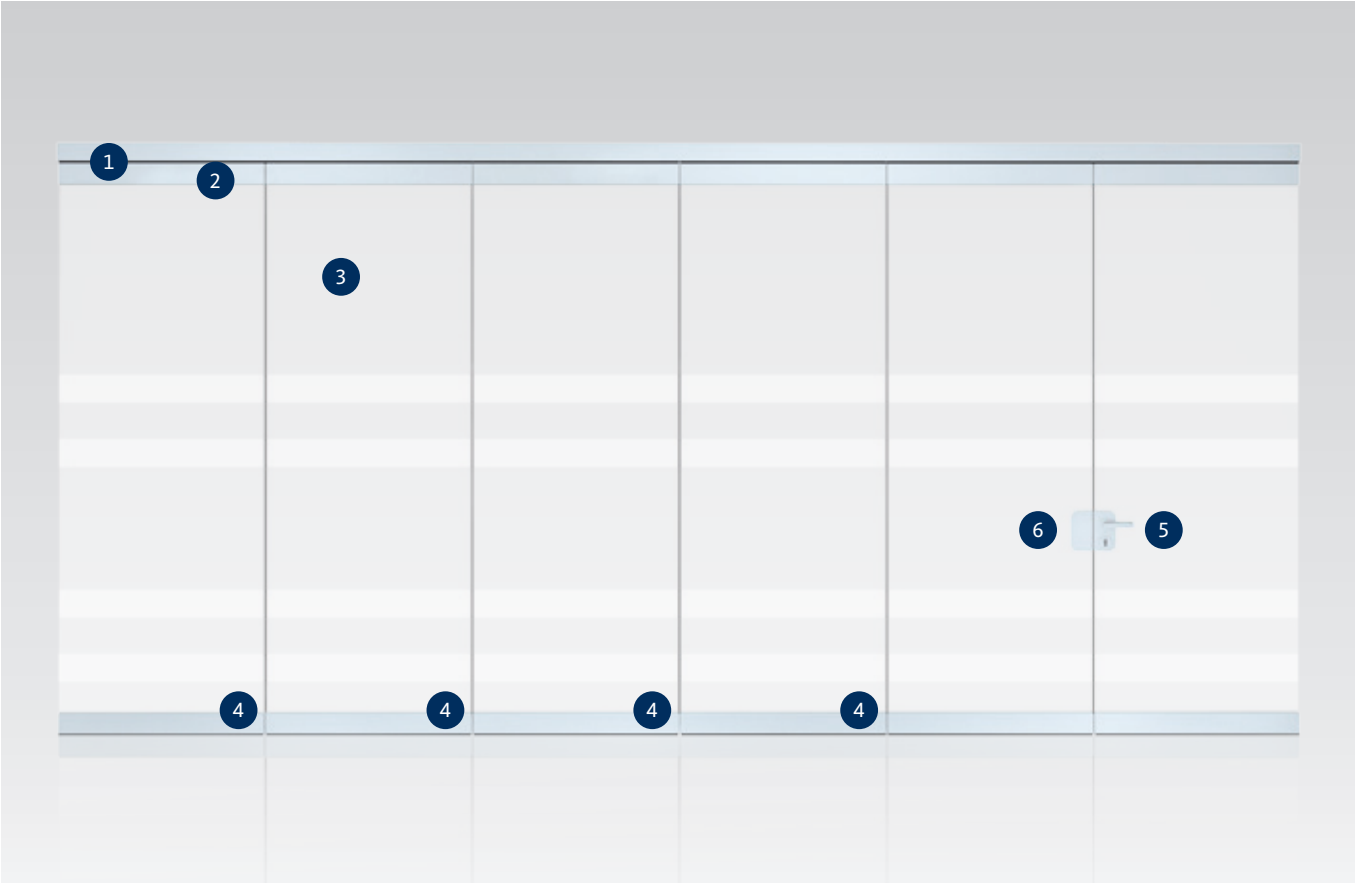
General planning tips

- The operating elements should be at a height of 85 – 105 cm from FFL
- Different floor structures in the area of the door draw attention to the element
- The clear passage width of ≥ 90 cm must be observed
- The requirements of the Machinery Directive apply

Highly flexible in terms of design and use of space.

Elegant appearance, flexible use of space and minimal space requirements: the benefits of all-glass sliding panels can be most clearly demonstrated in public areas. As partition walls, the glass sliding panel systems from the GU Group offer modern solutions that combine maximum accessibility with a high degree of versatility.

All-glass sliding panel systems



Suggested components

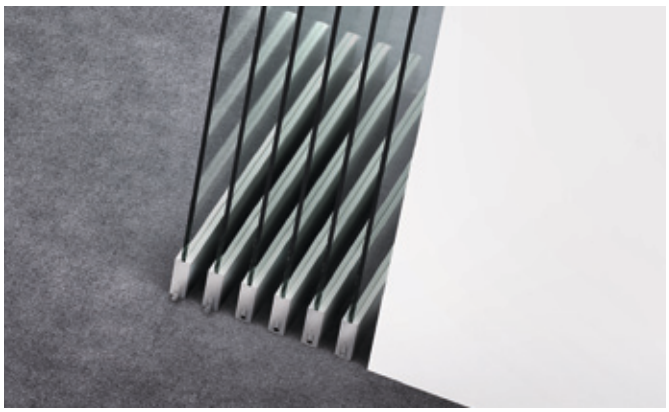
1. Modern bogie design
2. Clamping profile
3. Toughened safety glass 10/12 mm
4. End fixed locking bolt
5. PRIME OFFICE lock
6. PRIME ICE strike box

Barrier-free all-glass sliding panel systems for every floor plan

Barrier-free solutions tailored to individual requirements can be implemented in more or less any floor plan using GU Group all-glass sliding panel systems. In addition to a wide range of design options, they offer maximum comfort for users and operators alike – as a partition wall or a shop-in-shop solution, for example.

The elements slide easily and reliably thanks to state-of-the-art bogie technology. As the sliding wall elements do not require a floor guide, pedestrians or wheelchairs can enter without passing over a threshold. The space-saving design of the running track and parking niches ensures optimum use of space.

A side-hung end panel combined with a PRIME OFFICE lock makes a wide range of functions possible – ultimately also the integration of the glass door into an access control solution via radio control using a coupleable lever.



shop*Master GSW-M* all-glass sliding panel system, parked
When open, the shop*Master GSW-M* all-glass sliding panel system allows the space to be used to its full potential. They can be parked in a space saving inconspicuous manner. The completely open threshold-free passage offers maximum barrier freedom.

shop*Master GSW-M* all-glass sliding panel system, closed, with open swing leaf
A barrier-free configuration of the shop*Master GSW-M* all-glass sliding panel system is also possible by using a swing leaf. The solutions of the PRIME OFFICE series integrate harmoniously into the design. The panic function can also be ensured using a suitable passage width that guarantees barrier freedom.

shop*Master GSW-A* all-glass sliding panel system
The shop*Master GSW-A* version of the automatic all-glass sliding panel system offers added comfort during operation. The all glass system opens and closes automatically at the push of a button.

General planning tips

- All-glass doors or glass walls on traffic routes must contrast visually by using safety markings, e. g. with strips at a height of 40 – 70 cm and 120 – 160 cm above FFL
- Different floor structures in the area of the door draw attention to the element
- The clear passage width of ≥ 90 cm must be observed

Ease of access for individual comfort.

An interior door is an interior door, it might be said, but there is more to it than that: individual solutions are required, depending on the building type, building users and building area. Whether used in hospitals, schools, hotels, or also in private apartments – the requirements to be met by project and interior doors are many and varied. The GU Group therefore offers a comprehensive portfolio of interior door solutions that cover a wide range of requirements: from comfortable operating elements through to automatic opening and closing of the door.

Project and interior doors

Suggested components

1. BELCANTO WDL hardware
2. OTS 735 door closer (with manual door operation)
3. BKS panic lock 23 series

Alternative with automatic door operation:
– swing-door drive (with corresponding lever handle)
– electric strike
– push-button

Tailor-made comfort for interiors

The GU Group solutions for barrier-free project doors and interior doors offer a high degree of individuality, in other words: exactly the degree of comfort that is required.

The available products range from manually operated to servo-assisted and fully-automated solutions. Smooth-running lever handles, door closers with decreasing opening torques or the electric strike that facilitates contact-free operation are just some of the products used to achieve this.

As an all-round system supplier, the GU Group makes sure that all operating and function elements are perfectly harmonised – after all, this is the only way to ensure requirements are met and problems are avoided.

Overhead door closers: the new OTS 73x series
Owing to falling opening torques and flexible adjustment options, the new door closer variants of the OTS 73x series can be flexibly adapted to barrier-free use. Doors therefore open smoothly and effortlessly in compliance with DIN 18040.

Lever handle with WDL hardware
As far as the GU Group is concerned, barrier freedom is not just a matter of function, form also plays an important part: as demonstrated by the straight forms of the lever handles which simplify opening and closing. The operating forces required to achieve barrier freedom are therefore reliably maintained.

Electric door strike series No. 5 or 6
Also ideal for retrofitting: owing to its compact design and suitable screw spacing of 52.5 mm, the electric strike can be easily integrated into existing profiles. The adjustable radius keeper allows the gasket pressure of the door to be adjusted in two steps so the door will always fit perfectly.

General planning tips

- The clear passage width of ≥ 90 cm must be observed
- Low operating forces are required for doors: up to 25 N and max. 2.5 Nm (class 3 according to DIN 12217)
- To make them easier to operate, levers and handles must be U-shaped or curved and should contrast with their background so they stand out
- It must be ensured there is sufficient scope for movement in the area of the door (for details, see page 62 onwards)
- The Machinery Directive must be observed with automatic versions

Simply come home.

Whether arriving home with heavy shopping bags, pushchair or wheelchair, from work or from holiday: equipped with the intelligent technology of GU Group, house entrance doors and apartment entrance doors afford convenient and easy access. They can be equipped with a range of features, which even includes contact-free operation, so they can be adapted to the individual requirements of the occupants.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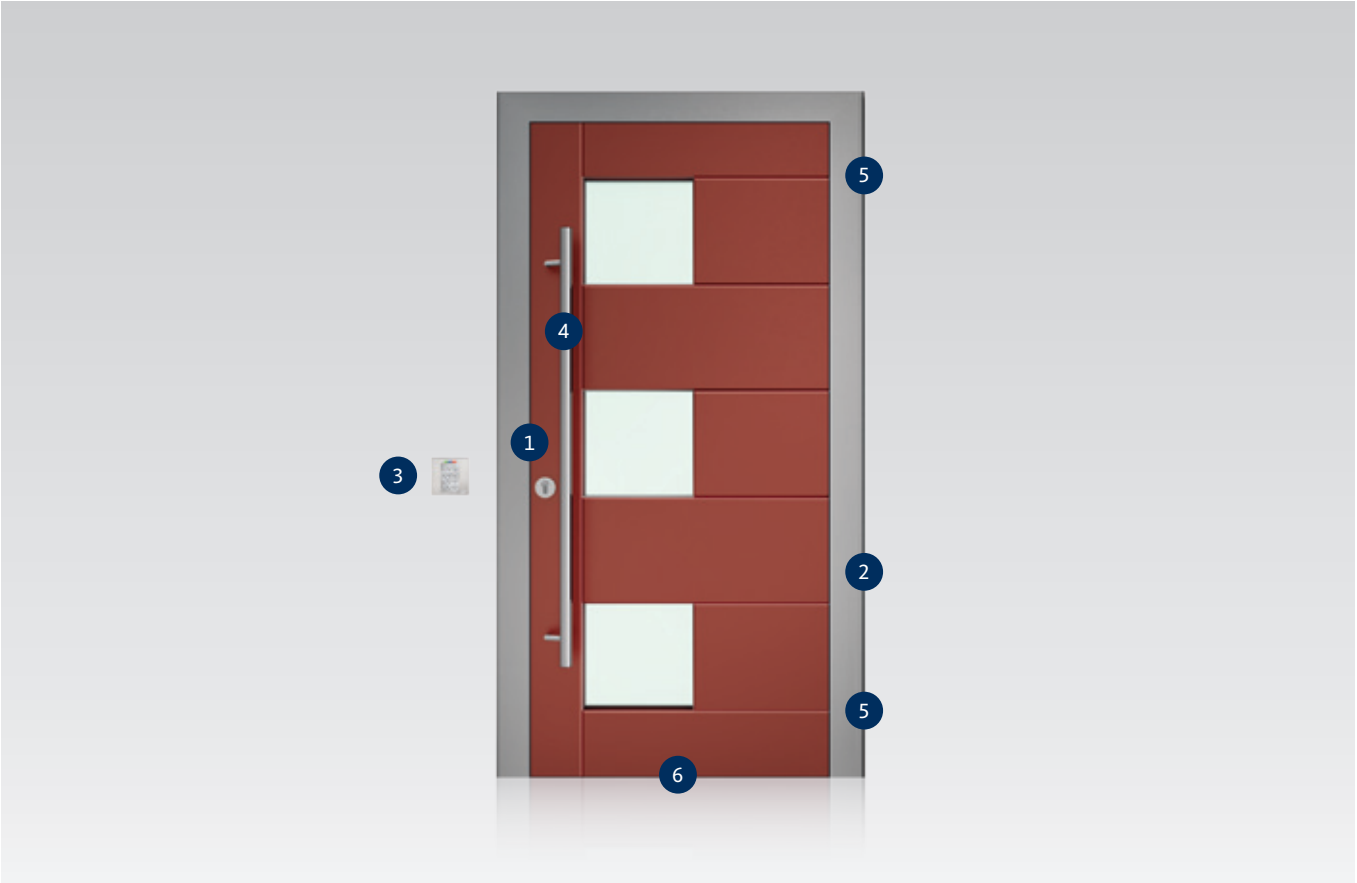
House and apartment entrance doors



Suggested components for house entrance door

1. GU-SECURY Automatic with A-opener servo
2. Frame-side connection to the SECURE*connect* 200 power and data transmission unit
3. Control via finger scanner or code keypad
4. Push/pull handle
5. Entrance door hinges
6. GU system threshold

Comfort and controlled access

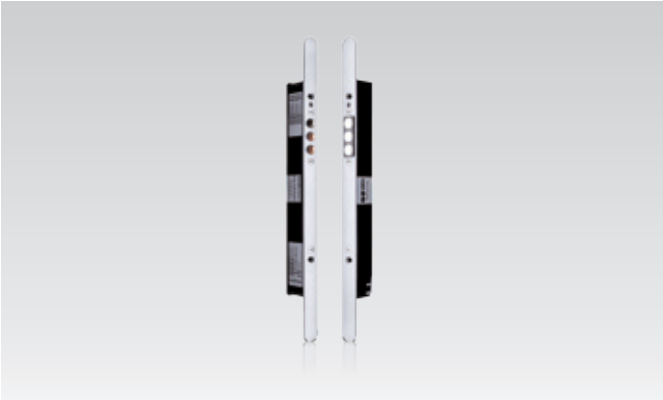
Main entrance doors and apartment entrance doors are the most important interface between private living space and the world outside. Whoever designs these as barrier-free and also takes the individual needs of the occupants into account ensures that the standard of living quality will remain high for a long time to come.

The GU Group provides a comprehensive range of intelligent product solutions to allow comfortable and controlled access to homes: from smooth mechanical key-operated systems to radio remote control or finger scanner through to integration in the Somfy building automation.

In this case, comfort starts with the smallest of details. The self-locking system with motor-driven unlocking requires no operating force.

GU-SECURY Automatic multi-point locking with A-opener servo
Barrier-free comfort for the occupants – and a formidable obstacle to unauthorized access: the servo-assisted motor-driven unlocking with a low lever or key turning force ensures motorised retraction of the automatic latchbolts. All locking elements are automatically locked once the door is closed. This locking system is also eminently suitable for retrofitting.

Finger scanner / code keypad
Biometric fingerprint recognition or an individual code ensure convenient access with no keys whatsoever. As the system is easy to use, configure and commission, it can be easily operated by anyone. The different operating elements provide flexible solutions for the users.



SECURE*connect* 200
The wireless energy and data transmission unit is installed between the door frame and door leaf and is suitable for all mechatronic locks of the GU Group. In addition to the integrated power supply unit, the latest generation has an interface for activation of an access control via finger scanner or code keypad.

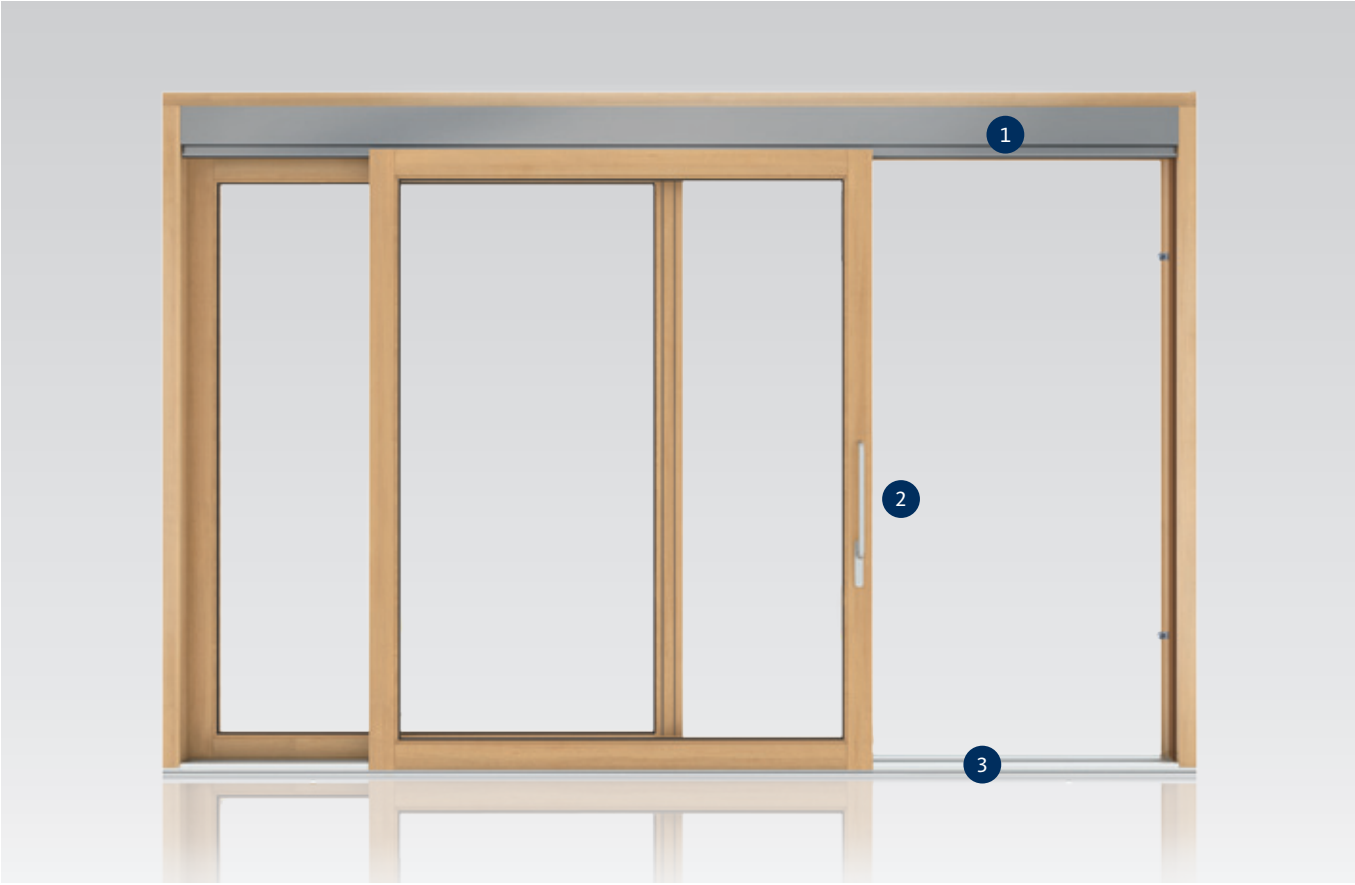
General planning tips

- The clear passage width of ≥ 90 cm must be observed
- The operating elements are installed at a height of 85 – 105 cm above FFL which is one of the most important comfort factors
- There must be sufficient freedom of movement in the access direction, particularly in the pivoting range of the door element
- The Machinery Directive must be observed with automatic versions

Turns outside space into open space.

Lift&Slide patio doors blur the boundary between the inside and outside and therefore convey a sense of distance and freedom. As these benefits should obviously go hand in hand with barrier freedom, mechanical or electronic components of the GU Group ensure a high degree of comfort and also contact-free operation – individually, flexibly and reliably.

Lift&Slide patio doors



Suggested components

1. HS-*Master* or HS-*Master* CONCEALED motor-driven drive
2. RONDO extended handle, handle length 400 mm
3. GU-thermostep 204 threshold with comfort profile for barrier-free passage, also available with optional LED lighting in the outdoor area

This degree of security can also be easy and convenient

Genuine comfort: this means enjoying the benefits of straightforward operation with a greater sense of security. GU Group solutions satisfy both requirements. The motor-driven HS-*Master* und HS-*Master* CONCEALED drives can be used without any additional security devices. They are equipped with an intelligent control system that detects obstacles and includes an anti-trapping function. The Lift&Slide patio door stops at a safe distance before the final open position thus preventing injuries. There are also no compromises made in terms of safety when using the remote control to close or slide the door shut: the anti-lockout device stops the door elements up to 10 cm short of the fully closed position to prevent the user being locked out of the building.

How does an intelligent control work? It detects obstacles immediately, stops then waits for a new pulse. This dispenses with the need for protective equipment, such as infrared light curtain or light barrier. A radar or infrared pulse can be used to facilitate contact-free operation.

A 'Comfort' profile in the threshold area also ensures unobstructed access on foot and in wheelchairs by allowing, in conjunction with a 5 mm high roller track, barrier-free passage from the inside to the outside.

HS-*Master* CONCEALED
The concealed HS-*Master* CONCEALED Lift&Slide hardware is a perfect combination of function, comfort and aesthetics. The drive is integrated into the upper horizontal frame member and the linkage is fully concealed in the sliding panel.

GU-thermostep 204 threshold
The GU-thermostep 204 threshold with optional 'Comfort' profile and 5 mm high roller track affords barrier-free access and also has outstanding thermal characteristics – irrespective of which door system and frame material is used. Optional LED lighting can be integrated into the outdoor section of the threshold to ensure optimum visibility. The threshold system is versatile and also ideal for retrofitting.

RONDO extended turn handle
High leverage with high degree of operating comfort: the RONDO extended turn handle can effortlessly open and close doors, even with a low operating force.

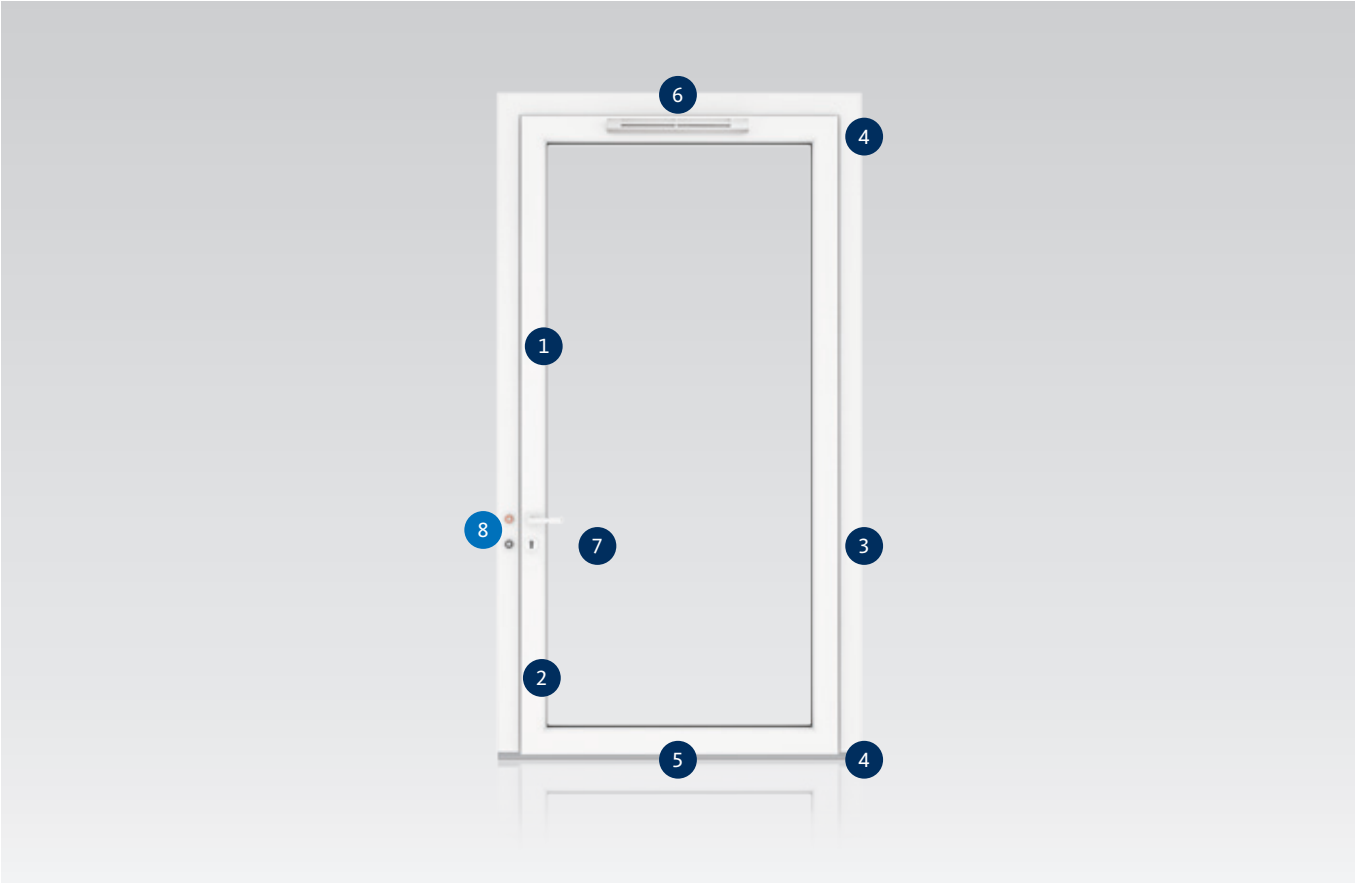
General planning tips

- To ensure the transition is as level as possible, the floor on the inside should be levelled with the threshold (max. level difference 20 mm, if technically inevitable)
- Careful planning of the drainage in the outdoor section is required to prevent damage due to the effects of the weather as a result of incorrect sealing of structural connections and / or incorrect installation of drainage systems
- The Machinery Directive must be observed with automatic versions

Convenient transition between indoors and outdoors.

Why not simply live outside? A barrier-free transition to the balcony or terrace makes this a reality. The GU Group offers the right solutions for balcony and patio doors: from smooth operation by hand through to push-button or radio-controlled opening. This provides easy access to the outside and allows the surroundings to be experienced.

Balcony and patio doors



Suggested components

1. GU-SECURY Automatic
2. A-opener kit
3. SECURE*connect* 200
4. UNI-JET S-CONCEALED F concealed hardware
5. GU system threshold
6. Humidity-controlled ventilator
7. Operating element (WDL hardware)
8. Push-button (open-close), optionally with remote control or elbow push-button

Easier access to fresh air

Sufficient space in the door area, easy opening and closing and barrier-free transition: only the careful planning of balcony-doors can ensure barrier-free access to balcony and terrace.

The easy-to-operate hardware of the GU Group provides the right equipment for this. Comfortable operation via assisted lever handle, push-button or radio control. This is combined with a threshold which is only 20 mm high and allows persons to pass through easily in a wheelchair or on foot. At the same time, the threshold ensures the necessary tightness in the system.

Thanks to GU Group technology, fresh air is not only available outside on the balcony, it also enters the living area fully automatically: an integrated ventilator with intelligent sensor technology allows the room to be ventilated without even opening the window or door.

Multi-point lock GU-SECURY Automatic with A-opener
Barrier-free comfort for the occupants – and a formidable obstacle to unauthorized access: unlocking is effected through motorised retraction of the Automatic latchbolts. The locking of all bolts is effected in a controlled manner via push-button or remote control and is only possible with the door closed. This prevents a person from being locked out by an unintentionally locked balcony- or terrace-door. The automatic multi-point lock provides high burglar inhibition.

GU system threshold
The GU system threshold with thermal break is only 20 mm high which ensures outstanding accessibility – both in new buildings and in refurbishments. When planning, careful attention must be paid to drainage in the outside area.

Ventilators
The requirements-oriented ventilation via a humidity-controlled GU ventilator ensures a high quality of room air at all times. This solution combines a high degree of comfort with energy efficiency and an optimum room climate.

General planning tips

- To ensure the transition is as level as possible, the floor on the inside should be levelled with the threshold (max. level difference 20 mm, if technically inevitable)
- Different floor structures in the area of the door draw attention to the element
- Careful planning of the drainage in the outdoor area is required in order to prevent damage by driving rain
- The clear passage width of ≥ 90 cm must be observed

Tilting, turning and sliding without effort.

One-sashed or multi-sashed? PVC, timber or aluminium? Irrespective of which window type is used – the GU Group makes sure that every version can be opened and closed barrier-free: a wide range of high-quality manual or motor-driven hardware systems ensures easy operation by any user.

Inclusion with UNI-JET

The UNI-JET window solution now provides comfortable and easy operation in compliance with DIN 18040, which makes ample yet secure ventilation possible.

This applies to adults and children, young and old, and people with physical disabilities; to facilities such as schools, nurseries, hospitals and residential homes for the elderly – the UNI-JET is one solution that meets all technical demands.

Takes barrier freedom to a new level

Even large and heavy sashes present no challenge to the UNI-JET: weights of up to 200 kg can be supported with the M 8 / 12 hinge side.

Modular solutions

Different opening types, varying materials plus the individual requirements in relation to barrier freedom, burglar protection and aesthetics: whatever the situation, the GU Group has the right hardware system for every window.

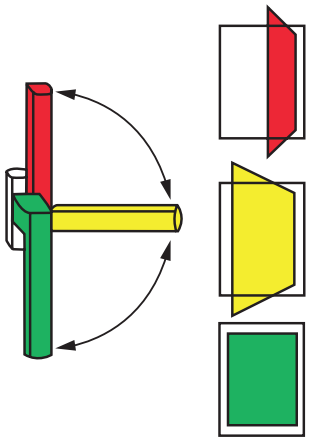
An extended handle makes operation comfortable and easy: owing to the high leverage, the window can be opened and closed with very little force. A motor-driven drive completely dispenses with the need for manual operation.

Window position

Inrush air setting

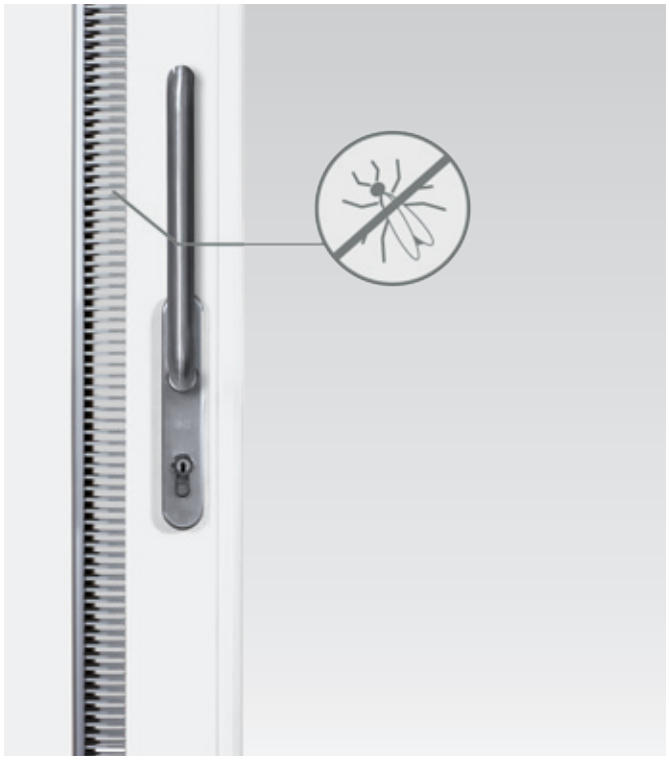
Open to approx. 100 mm (secured ventilation position)

Closed



Horizontal-Pivot windows
Horizontal-Pivot windows can be comfortably operated due to their handle being positioned at an ergonomically favourable height. A motor-driven drive opens and closes the window without requiring any manual intervention whatsoever. The command can be sent via push-button or radio control.

Lift&Slide windows
Lift&Slide windows combine wide-ranging panorama vision with comfortable opening. They also eliminate sashes that cause problems by projecting into the interior. Motor-driven Lift&Slide windows offer infinite freedom of movement at the push of a button.



Lift&Slide night vent module
With the Lift&Slide night vent module, the GU Group is offering a system that, despite offering optimum ventilation comfort, also provides outstanding burglar protection. Elements with built-in L&S night vent module are also securely locked in the ventilation position.

General planning tips

- An element must be installed at a height of 60 cm above FFL in living rooms and bedrooms to allow unobstructed views to the outside
- Fall protection must be provided with the above installation position: a balustrade height of at least 90 cm and a balustrade height of 110 cm at heights greater than 12 m
- The operating elements should be at a height of 85 – 105 cm from FFL

And behind the facade? Added value!

Special aesthetical solutions for sophisticated facade architecture are possible, despite the existence of countless standards and requirements. Windows are an important element in this. They should blend harmoniously into the overall creative imagery of the facade and also carry out tasks such as ventilation, thermal insulation and burglar protection. The requirements for barrier freedom are as complex as the functions. Fortunately, the GU Group has the right window solutions for every facade – using mechanical systems, motor-drives or intelligent electronics, they make operation easier and offer genuine added value for the property as a whole.

Trump Tower, TR-Istanbul:
Brigitte Weber Architects, TR-Istanbul
Photographer: Cemal Emden

Window solutions for facades

GT Tower East, KR-Seoul:
ArchitectenConsort (Peter Couwenbergh / Edgar Bosman), NL-Rotterdam
Photographer: Edgar Bosman, NL-Rotterdam

Parallel-Projecting hardware

The special solution for sashes weighing up to 400 kg: the Parallel-Projecting hardware makes opening widths of up to 250 mm and sash heights of up to 5,000 mm possible. A comprehensive range of manual and motor-driven versions of Parallel-Projecting windows can be manufactured in all frame materials, such as timber, PVC and aluminium.

Made-to-measure building envelope

Several complex requirements must be met simultaneously when planning and building facades: in addition to the requirements for barrier freedom and ventilation, aesthetical and technical demands must also be satisfied. A specialist in every method of facade opening, the GU Group is available as a competent partner in the quest to find tailor-made solutions for these challenges.

These also include product solutions such as the Parallel-Projecting window, which made it possible for the first time to open floor-to-ceiling window elements up to 5000 mm manually. The fall protection, integrated in the hardware, allows the elements to be used without having to provide extra safety measures on the outside or inside.

Sash weights are also changing due to the rising popularity of floor-to-ceiling glazing and the new legal requirements to be met by thermal insulation. Elements weighing over 400 kg are no longer unusual, due to triple glazing. This is for example why the GU Group has developed hardware for Projecting Top-hung, Parallel-Projecting, Horizontal-Pivot or Turn-Only windows which can take more weight. Thus the new Up&Over window hardware allows the room to be used to maximum effect, without making compromises in terms of aesthetics, safety and energy balance.

Turn-Only hardware
Modern facades, with their floor-to-ceiling windows, present a challenge for standard hardware. The GU Group provides an efficient solution for this: the special hinges for Turn-Only sashes are concealed in the hardware zone or in the stainless steel and carry sash weights up to 350 kg

St. Giles Court, GB-London: Renzo Piano Building Workshop, architects in collaboration with Fletcher Priest Architects (London) Photographer: Maurits van der Staay 2010, FR-Paris

Projecting Top-hung hardware
The hardware range for manually-operated and motorised Projecting Top-Hung sashes provides a large number of different Projecting Top-Hung friction stays with an opening angle of 20° to 50°. This means that sash heights of up to 2500 mm are possible – irrespective of whether the frame is made of timber, PVC or aluminium.

Neckar Tower, DE-Villingen-Schwenningen: JSK Architekten, DE-Düsseldorf

Special constructions
The specialists of the GU Group develop innovative manual and motor-driven opening mechanisms to meet the specific demands placed on ventilation elements in the facade. They draw on many years of experience to arrive at creative project-specific solutions tailored to individual requirements.

Community centre, Unterföhring, Germany: WerkGemeinschaft Guttenberger, Stuttgart, Germany

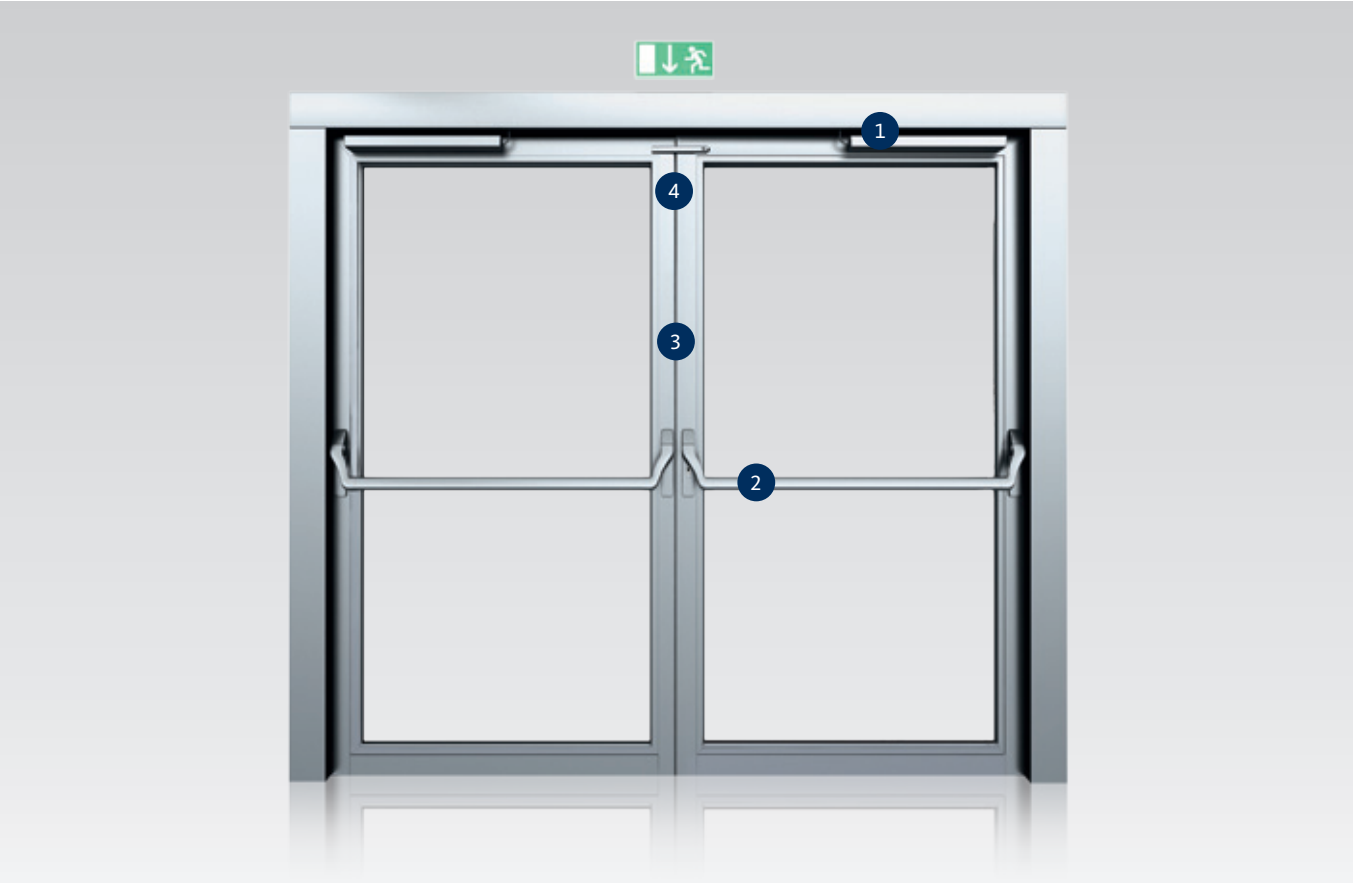
General planning tips

- Fall protection must be provided depending on the falling height: Minimum balustrade height 90 cm and 110 cm from 12 m falling height
- The operating forces should be adapted to user requirements: max. 25 N and 2.5 Nm (class 3 according to DIN 12217)
- When automatic versions are used, the requirements for power-operated windows must be observed

One-stop fire protection and barrier freedom.

Architects, planners and property developers aim to build elegant and aesthetical buildings – without barrier freedom and fire protection compromising their overall effect. The GU Group fortunately offers systems that satisfy these requirements. How does this work? With barrier-free windows and doors that provide comfortable in/out ventilation on a day-to-day basis. They are also used as smoke and heat exhaust ventilation systems thus ensuring reliable smoke extraction in the event of fire. These complete one-stop systems make planning and correct execution easier.

Smoke and heat exhaust ventilation systems / Natural smoke extraction and ventilation



Suggested components

1. ELTRAL TA 60 door drive
2. Push bar
3. SECURY 19 multi-point lock
4. Carrier bar for closing sequence control

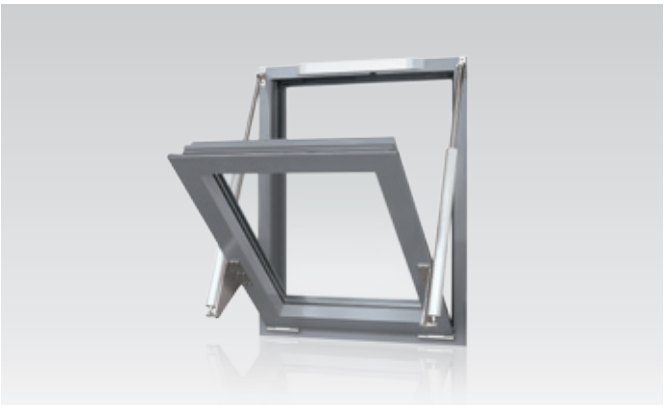
Barrier-free and secure

Barrier-free access, fire and smoke protection, natural ventilation: as these requirements are many and varied, careful planning and execution is required. The GU Group therefore offers all-round system solutions for facades – by providing technically fully fledged products and planning expertise as a one-stop service.

The result is barrier-free door and window systems that also provide reliable smoke and heat exhaust ventilation in the event of fire – and also natural ventilation via the building automation. Their high degree of operating convenience and visual appeal cater for every conceivable requirement.

Smoke and heat exhaust ventilation system air supply – ELTRAL TA 60 door drive
Ensuring reliable functionality of smoke and heat exhaust ventilation systems: with the ELTRAL TA 60 door drive, swing doors in entrance areas can also be used as RWA air supply.

ELTRAL chain drives
Reliable and comfortable opening and closing of Tilt-Only, Top-Hung and Turn-Only windows and skylights in the event of fire and when ventilating on a daily basis: ELTRAL chain drives can be simply adapted to the window architecture and combined with locking drives. This means that even large and heavy window elements can be moved easily.



Opening systems for smoke and heat exhaust ventilation systems
The opening systems for smoke and heat exhaust ventilation systems open and close inwards and outwards opening Tilt-Only, Top-Hung and Turn-Only systems automatically. They can achieve large opening widths, even with small travel distances and sash heights. The systems are equipped with integrated closing and opening sequence control and electromechanical sash locking. Different locking and unlocking versions are available: face-fixed, one or two-fold, as square-spindle drive, motorised via the internal central locking system and also as solo or synchro version.

General planning tips

- The system requirements must be taken into account
- The requirements for power-operated windows apply (incl. risk evaluation)
- The clear passage width of ≥ 90 cm must be observed
- The Machinery Directive must be observed

Small control, high-degree of living comfort.

Open the entrance door from the parking space. Securely lock the entire house at the push of a button. Or conveniently ventilate via remote control. The operation of motor-driven drives via radio or remote control offers maximum comfort in every situation. The GU Group has the full range: from control of individual doors/windows through to the fully networked 'homecontrol' system. The barrier freedom can therefore be flexibly adapted to individual user requirements.

somfy

Barrier-free at the push of a button – with SOMFY building automation

The GU Group provides an important basis for tailor-made concepts by combining building automation with barrier freedom. Increased use of the Internet with mobile terminal devices means that intelligent and convenient control of central building functions is becoming more important than ever. In addition to control, this also includes the monitoring of building functions. The main entrance door can for example be controlled remotely and also monitored in this way. Questions such as "Is the window closed?“ and "Have I locked the door?“ can thus be answered immediately.

Reliable power and data transmission with SECURE*connect* 200 is the basis for convenient control. The latest product generation is equipped with interfaces for access control via finger scanner or code keypad as well as control options via hand-held radio transmitter or Somfy io-homecontrol. This solution developed by Somfy and the GU Group therefore bridges the gap between security, control functions and convenience.

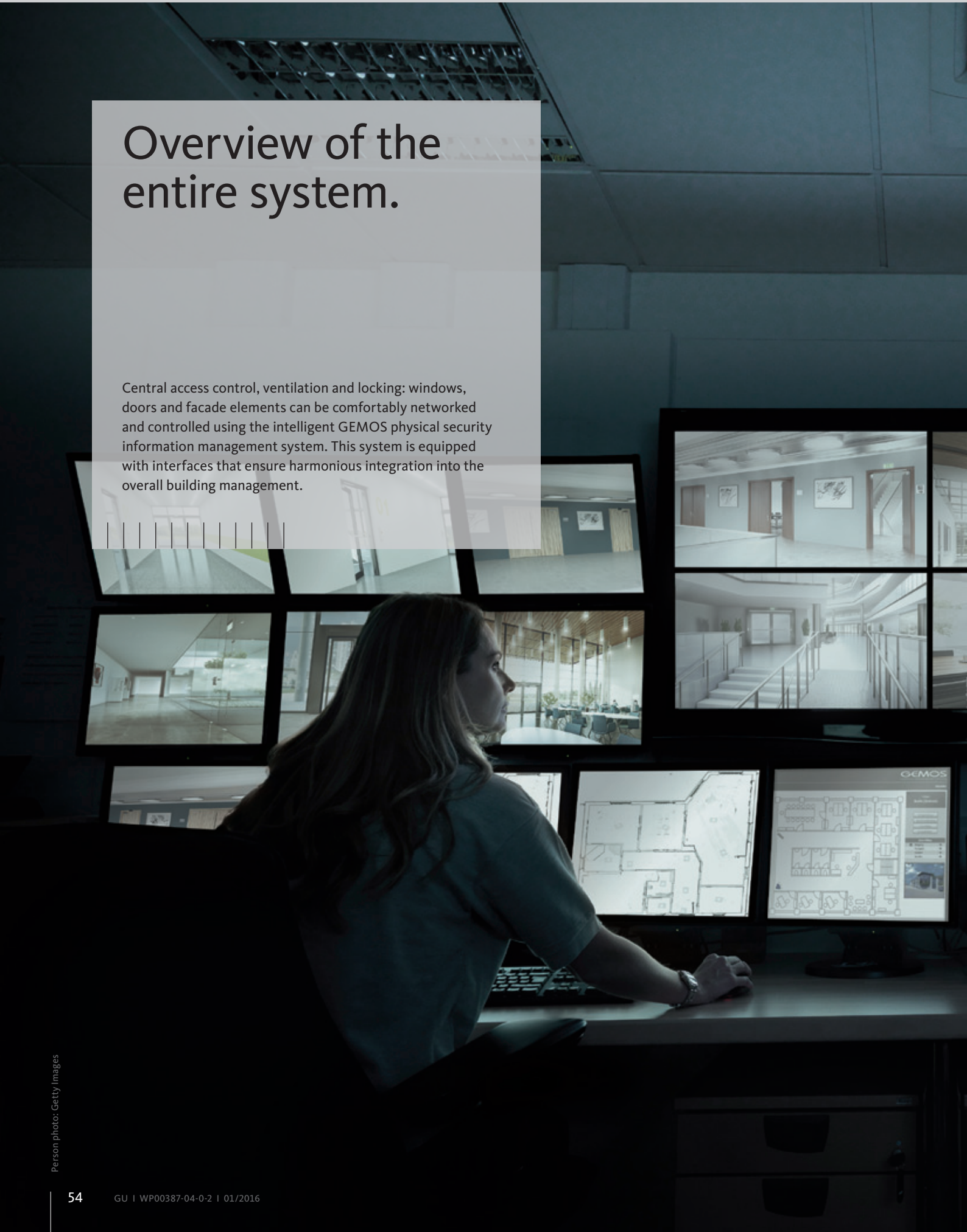
Finger scanner / code keypad
Biometric fingerprint recognition or an individual code ensure convenient access with no keys whatsoever. Simplicity of use, configuration and commissioning means the system can easily be operated by anyone. The different operating elements provide flexible solutions for the users.

Radio transmitter
The small control station for domestic use: up to four elements can be controlled and operated using this version. This comfortable operator control makes activation possible without high operating forces.

SECURE*connect* 200
Greater security and convenience for mechatronic locks: power and data transmission between the door leaf or window sash and frame is one of the methods used by the GU Group to ensure this. The compact solution SECURE*connect* 200 does not restrict the opening width and can be flexibly combined with further components, such as finger scanner, code keypad, remote control or Somfy io-homecontrol control options, for example.

General planning tips

- The clear passage width of ≥ 90 cm must be observed
- The installation of control elements at a height of 85 – 105 cm above FFL is one of the most important comfort factors
- There must be sufficient freedom of movement in the access direction, particularly in the pivoting range of the door (for details see page 62 onwards)
- Different floor structures in the area of the door draw attention to the element



Overview of the entire system.

Central access control, ventilation and locking: windows, doors and facade elements can be comfortably networked and controlled using the intelligent GEMOS physical security information management system. This system is equipped with interfaces that ensure harmonious integration into the overall building management.

Person photo: Getty Images

Centrally controlled, flexibly networked

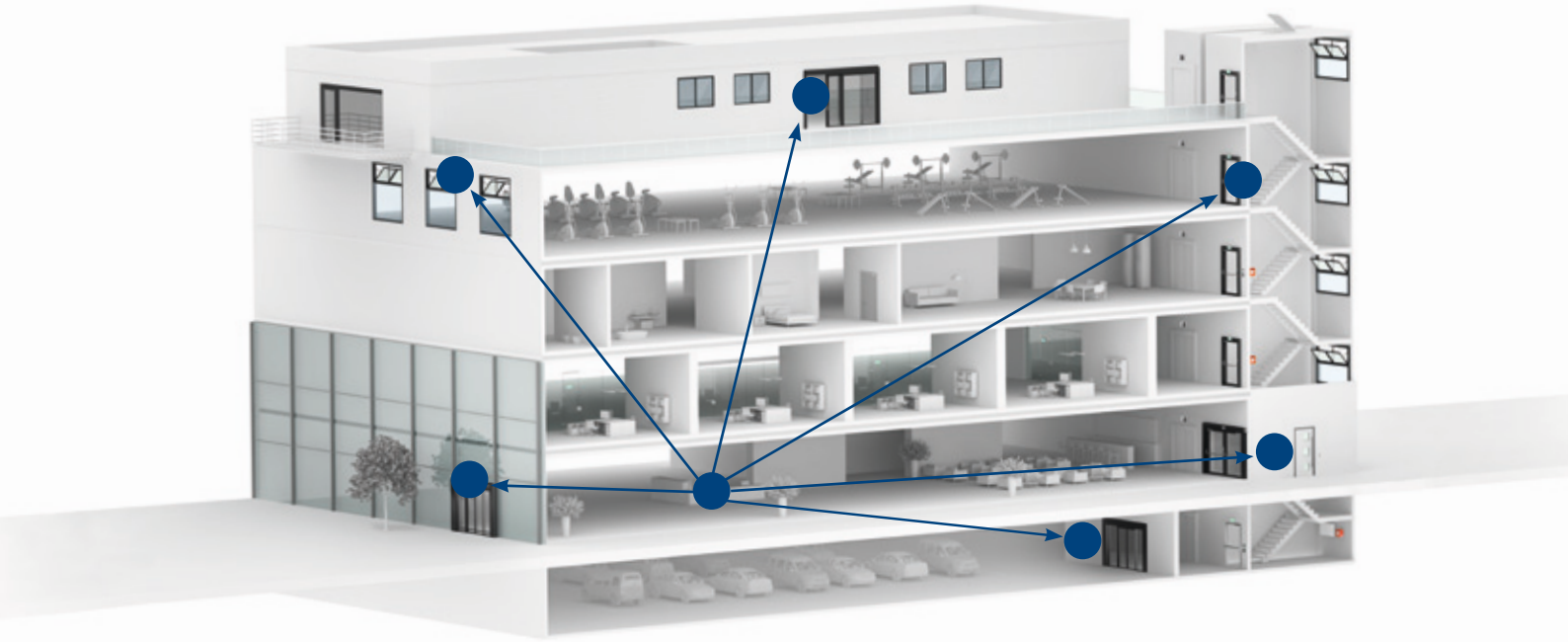
Barrier-free entry, passage and exit – escape door security and burglar protection, ventilation and fire protection: the tasks performed by doors are many and varied. With GEMOS, the GU Group ensures that these tasks can be centrally managed and controlled. The management platform can be flexibly adapted to the building situation and therefore offers intelligent solutions from door management through to integration into the overall building management. The user-friendly interface also ensures straightforward and safe operation of complex safety-relevant facilities.

Person photo: Getty Images

Central door management
All door statuses can be determined at a glance and managed in coordination with other systems such as fire alarm systems or access control – both individually or as a complete system.

No additional software
All operating tasks are carried out via individually modified web interfaces in MS Internet Explorer or Mozilla Firefox. No additional software is therefore required at the workstations.

Intuitive operation
The user-friendly interface ensures straightforward handling and makes statuses such as alarms, faults and messages clearly understandable.



Appropriate to situation
Different operation modes can be selected in GEMOS for all building systems: they can for example be synchronously switched to day mode, night mode or alarm at the push of a button.

Advantages at a glance

- Central monitoring and control of doors, windows and facade elements
- Integration into building management possible
- Individually adapted to the size and purpose of the building
- Intelligent alarm management

Systematic Service

A product on its own is not a solution. The right security, function and cost-effectiveness can only be achieved with the right planning and by ensuring correct application. Therefore when it comes to the subject of barrier freedom it is even more crucial to have a reliable partner who is conversant with the current standards and directives and can provide all-round support from the outset. The GU Group therefore also applies the systematic thought processes demonstrated in its product range to its service offering. Close interlinking of one-to-one expert advice, free online support and a comprehensive programme of technical seminars aims to make the day-to-day work of architects and planners easier.

Image: Getty Images

Opening, closing, moving: expert assistance on all aspects of the all-encompassing product range of the GU Group

Planning support

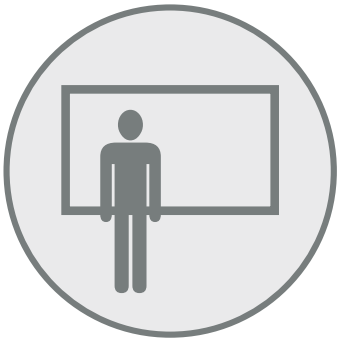
The basis for successful construction projects: the GU Group provides architects and planners with comprehensive support right from the planning stage. Comprehensive cross-trade concepts tailored to the individual building requirements are developed in close collaboration with the customers. These take into account the security of the building and occupants and barrier-freedom, comfort and aesthetics in equal measure.

Licenses and CE

Maximum security as standard: the GU Group is a CE licenser for windows and balcony-doors and can undertake the CE certification on your behalf thus saving you time and effort in your day-to-day business.

Building project consulting

Simplifies everyday work: building project consulting assists architects and planners with project-specific drawings and door schedules, cable diagrams and tender specifications or conceptual designs with functional descriptions, for example. Well thought out and coordinated system solutions guarantee functionality and compliance with the required standards and directives.



Seminars and training courses

Practical knowledge based on first-hand experience: with around 160 events annually, the GU group offers an extremely wide range of seminars and training courses. The programme includes product innovations and their applications, current architectural trends and standards and directives. Several seminars and training courses are certified and recognised as advanced training courses by the chamber of architects and civil engineers in Germany.

Hotline for architects

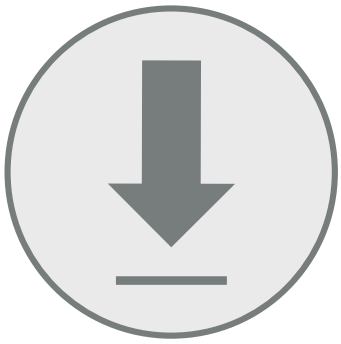
The building project consultants at the hotline for architects provide personal expert advice on all planning questions and can provide detailed information on GU Group products:
by telephone +49 (0)2051/201-2000,
e-mail objektberatung@g-u.de or
using the form at the company website
www.g-u.com

Door engineering

Step by step to the right door solution: with its Door Engineering concept, the GU Group developed an efficient method for configuring individual doors. Cross-trade solutions are prepared based on experimental models. The documentation ensures maximum planning reliability based on clearly laid out door configuration lists.

Tender-Text-Manager

Comprehensive, legally sound and technically up-to-date: with the Tender-Text-Manager ('AusschreibungsManager'), the GU Group is offering architects and planners a convenient and effective online tool that allows them to effortlessly compile technical specifications and complete tender specifications – for all GU Group products.



Free download

To make planning easier: a wide range of information on the products and applications is available to download from the company website to the local hard drive quickly, conveniently and free of charge: from product documents and installation drawings to Declarations of Performance through to software solutions.

Planning aid

Why barrier freedom starts with safety-related requirements
One hundred percent barrier freedom is not possible as the requirements may conflict. Visually-impaired persons require different solutions to wheelchair users, and older persons do not have the same needs as children. This is why the most important safety objectives should be defined in the initial planning stages. By setting the right priorities restrictions can be reduced to a minimum in order to achieve maximum comfort and availability for all users.

1. Public building according to DIN 18040-1

Building entrance doors

Automatic sliding doors
- Without threshold (observe installation position)
- Version for escape and rescue routes available
- Generous passage widths and heights possible
- Opening and closing

Please note:
- Contrasting safety markings with large areas of glass (from 40 to 70 cm and 120 to 160 cm above FFL)
- Clear passage width, clear passage height W ≥ 90 cm, H ≥ 205 cm)
- Machinery Directive / risk assessment
- Movement zones

Automatic swing doors
- Available without threshold (ensure correct installation position)
- Version for escape and rescue routes available
- Generous passage widths and heights possible
- Automatic opening and closing

Please note:
- Safety markings with large glass areas (from of 40 to 70 cm and 120 to 160 cm above FFL)
- Clear passage width, clear passage height (W ≥ 90 cm, H ≥ 205 cm)
- Positioning / spacing of operating elements (e. g. push-button height normally 85 cm)
- Machinery Directive / risk assessment
- Movement zones

Attention:
Revolving and double-action swing doors. Not barrier-free, only possible in combination with other barrier-free doors

Inside

Interior doors
- Version without threshold
- Version available for escape and rescue route
- Fire /smoke protection requirements possible
- Automation possible

Please note:
- Operating forces (max. 25 N, class 3 according to DIN EN 12217)
- Clear passage width, clear passage height (W ≥ 90 cm, H ≥ 205 cm)
- Max. depth of reveal 25 cm
- Min. 50 cm side clearance
- Operating heights (e. g. push-button, lever handle) 85 cm (up to 105 cm possible in exceptional circumstances)
- Easy-to-operate hardware (e. g. U-shaped or curved)
- Movement zones
- Orientation aids
- Machine Directive / risk assessment with automatic version

All-glass sliding panel systems
- Manual or automated
- Without threshold
- Version with swing leaf available

Please note:
- Contrasting safety markings with large glass areas (from 40 to 70 cm and 120 to 160 cm above FFL)
- Clear passage width, clear passage height (W ≥ 90 cm, H ≥ 205 cm)
- Observe operating forces (max. 25 N, class 3 according to DIN EN 12217)
- Machinery Directive / risk assessment with automatic version

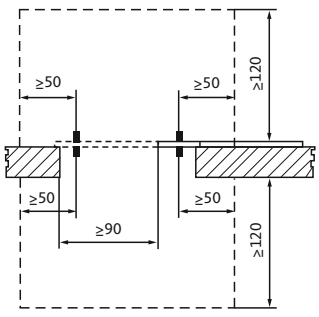


Figure 1: Movement zones in front of in-line sliding doors, dimensions in centimetres

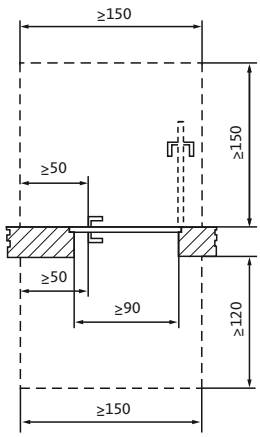


Figure 2: Movement zones in front of swing doors, dimensions in centimetres

2. Apartments to EN 18040-2

House and apartment entrance doors
- Automation possible
- Increased burglar protection possible
- Operation via finger scanner
- Operation via code keypad
- Integration into building automation

Please note:
- Threshold max. 2 cm, if unavoidable for technical reasons
- Operating forces (max. 25 N, class 3 according to DIN EN 12217)
- Clear passage width, clear passage height (W ≥ 90 cm, H ≥ 205 cm)
- Max. depth of reveal 25 cm
- Min. 50 cm side clearance
- Operating heights (e. g. push-button, lever handle) 85 cm (up to 105 cm possible in exceptional circumstances)
- Easy-to-operate hardware (e. g. U-shaped or curved)
- Movement zones (see swing doors)
- Machinery Directive / risk assessment with automatic version

Lift&Slide balcony-doors
- Manual
- Automated

Please note:
- Threshold max. 2 cm, if unavoidable for technical reasons
- Operating forces of handle (extended turn handle if necessary)
- Drainage in outdoor area
- Movement zones (see in-line sliding doors)
- Machinery Directive / risk assessment with automatic version

Balcony-doors
- Increased burglar protection (automatic multi-point locking)
- Servo-assisted handle operation

Please note:
- Threshold max. 2 cm, if unavoidable for technical reasons
- Clear passage width, clear passage height (W ≥ 90 cm, H ≥ 205 cm)
- Operating heights (e. g. push-button, lever handle) 85 cm (up to 105 cm possible in exceptional circumstances)
- Easy-to-operate hardware (e. g. U-shaped or curved)
- Operating force (move ≤ 30 Nm, open ≤ 5 Nm, class 2 according to DIN EN 13115)
- Movement zones (see swing doors)
- Drainage in outdoor area

Windows
- Automated (motor-driven drive)

Please note:
- Operating force (move ≤ 30 Nm, open ≤ 5 Nm, class 2 according to DIN EN 13115)
- Extended handle if necessary
- Operating height / window handle (85 to 105 cm above FFL), or automation of 1 window in each room is required as alternative
- Fall protection
- Machinery Directive / risk assessment with automatic version

Interior doors

Please note:
- Version without threshold
- Easy opening and closing
- Clear passage width, clear passage height (W ≥ 80 cm, H ≥ 205 cm)
- Easy to operate hardware, no turn handles, no knobs
- Movement zones

Miscellaneous

Safety markings
- Safety markings extend across the full width of the glass
- Visually, safety markings are highly contrasting
- Safety markings contain bright and dark parts (contrasting strips), to take variations in background lighting conditions into account

▶ For visual contrasts also see DIN 32975

Orientation aids on doors for blind or visually-impaired persons
- Door leaves and frames can be clearly identified by touch
- The door has a contrasting design: e. g. light wall and dark frame or light leaf with dark main closing edge and dark hardware
- Any thresholds that are installed must be identifiable by using highly contrasting materials/colours

Easy to operate lever sets for persons with motor impairment, blindness or visual impairment:
- U-shaped or curved handles
- Vertical grips with manually-operated in-line sliding doors

Please note:
- No turn handles (e.g. knobs) and no recessed handles

Requirements / Standards / List of references

Geometric requirements to be met by doors

Components	Geometry	Dimensions [cm]
All doors		
Passage	Clear width	≥ 90
	Clear height above FFL	≥ 205
Reveal	Depth	≤ 26 [1]
Lever, handle	Distance to components, equipment and exhibition elements	≥ 50
Assigned labels	Height above FFL	120 up to 140
Manually operable doors		
The axis of grab heights and operating heights is basically 85 cm above FFL. In justified individual cases, e.g. if an apartment for unrestricted wheelchair use is not available in the residential building, other dimensions within a range of 85 cm to 105 cm are acceptable.		
Lever handle	Height of rotation axis above FFL (centre of follower)	85 (≤ 105)
Passage	Height above FFL	
Passage	Grab height above FFL	
Automatic door systems		
Push-button	Height (centre of push-button) above FFL	85
Push-button, swing leaf / sliding door with lateral approach	Distance to main closing edges [2]	≥ 50
Push-button, swing leaf with frontal approach	Distance opening direction	≥ 250
	Distance closing direction	≥ 150
Push-button, sliding door with frontal approach	Distance on both sides	≥ 150
FFL = finished floor level		

[1] Wheelchair users can only reach lever handles if the grab depth is not too large. This is always possible with max. reveal depths of 26 cm. Availability must be ensured by another means for larger reveals.
[2] The main closing edge with swing doors is the vertical door edge on the lock side.

Standards / List of references

Basic legal principles:
- Fundamental law article 3
- Ban on discrimination and law on equal opportunities for disabled persons in the German constitution (BGG)
- UN Convention on the Rights of Persons with Disabilities

Construction Products Regulation
Model Building Regulation
- The applicable federal state building code

AST – Technical regulations for workplaces
DIN 18040-1 Barrier-free construction – public buildings
DIN 18040-2 Barrier-free construction – apartments

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Page 45	Photo at top: 2002-2010 Central St.Giles mixed-use development, London, UK Renzo Piano Building Workshop, architects in collaboration with Fletcher Priest Architects (London) Photographer: Maurits van der Staay 2010, FR-Paris; Photo in centre: JSK Architekten, DE-Düsseldorf
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Page 59	Architects discussing a green construction project, designing and building efficient environmentally friendly buildings. Green architectural practice, provided courtesy of Mint Images RF collection / Getty Images

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