



MASTERINGENIEROS
PUERTAS AUTOMÁTICAS

micomdoor[®]
AUTOMATIC DOORS

In  **MASTERINGENIEROS** we reassert our commitment with the environment by:

1. Our integrated quality and environmental management system, which meets all ISO 9001/ ISO 14001 standards.
2. The total awareness of our management system which is led by an involved leadership.
100% of our electricity consumption is obtained from CO2-free energy, which allows us to generate a surplus which is fed into the national network.

In addition, in Máster Ingenieros S.A. we have always pursued competitiveness and the satisfaction of our customers, suppliers and other companies involved through our commitment to achieve continuous improvements and environmental protection. Guaranteeing the quality of our products, activities, procedures and services, as well as a sustainable use of resources, and the minimization and management of our waste products.

As our  **MASTERINGENIEROS** main suppliers, we rely on local and national partners to obtain the best materials and technologies, ensuring that the quality of our products is at the highest level.





MASTERINGENIEROS

PUERTAS AUTOMÁTICAS

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MASTERINGENIEROS PUERTAS AUTOMÁTICAS was founded around 1977, to meet a new market demand: the installation of garage doors and gates for public and private buildings. Later on, we started distributing and installing automatic pedestrian doors, incorporating parts designed by our own company; to, little by little, start fully designing our own automatism and automatic doors, as well as the aluminum systems that compounds the leaves of our automatic pedestrian doors.

Since then, we've been continuously evolving and improving. Today, Máster Ingenieros is present in countries all over the world, mainly in Europe, Africa, Middle East, Asia and South America.



UNE-EN ISO 9001

MASTER INGENIEROS counts with a UNE-EN ISO 9001 certification, maintaining, updating and improving its integrated management system on a daily basis.

TUV NORD 16.005



TUV NORD evaluates and certifies that all legal requirements as well as voluntary standards are met, so as to ensure the highest level of competence in our automatic door operators.



UNE-EN ISO 14001

MASTER INGENIEROS has had a UNE-EN ISO 14001 certification since March 2020, which integrates environmental management into its business philosophy.

ENSAYO DE DURABILIDAD



SGS assures the durability of our automatic door systems with more than 4.3 million cycles.

Our automatic doors have the best design and reliability, thanks to our 40 years of experience in the sector.

All the architects, decorators and distributors requests are satisfied by the multiple configurations that we have designed. Our wide range of automatism, aluminum and stainless steel systems, makes it possible to provide solutions to the sanitary, hotel, commercial and transport industry, etc.

Automatic pedestrian **micomdoor** AUTOMATIC DOORS doors (our registered trademark for the sale of our products) are controlled by a new generation of microprocessors with the best functions and features, providing continuous running, durability, low noise levels, self-learning parameters, partially opening automatic or fixed, safety system for obstacle detection, etc.

PERKS OF OUR TECHNOLOGY

TECHNOLOGY 100% MADE IN SPAIN

- Integral design by our Engineering and R+D+I department, 100% in Spain with wide experience in mechanical, electronic and software design.
- Our **brushless** motors are ultra-silent. Compared to other motors, this type of motor delivers much more power with the same size which makes our motors smaller and lighter. Their brushless technology releases them from maintenance processes and they barely get heated up as they eliminate brush friction compared with conventional motors.

To sum up, if we compare them to standard DC motors and AC motors, they provide:

- Higher speed-to-motor ratio.
 - Greater dynamic response.
 - Higher efficiency.
 - Longer life service.
 - Less noise levels.
 - Greater speed range
- The developed technology works on the grounds of high performance and reliable DSP (Digital Signal Processor) microprocessors as well as switch-mode power supplies that power the system with lower consumption.



- The wheels that we have designed for our hanger rollers are made of a special super-strong self-lubricating polyamide compound that is almost non-wearing and also provides a very low sound coefficient.
- The movement is done by nearly unbreakable neoprene timing belts manufactured by several major car tyre manufacturers.
- The software that controls our automatisms does all the door's configuration for you. It has been simplified so that any technician, even without experience, can install them without any problem. As soon as the operator is fed with the door leaf(ves) on place, it starts a cycle of several self-learning maneuvers, after which the movement of the door is acknowledged and all the necessary parameters are set for its proper running
- The fact that we have designed all the technology that we use, allows us to offer design and development on demand.
- Prototyping through 3D printing and proto-plaques before the creation of each product gives us great flexibility and capacity to respond to the new needs of our customers.
- Collaborating with leading companies in mechanization processes, assembly, production management according to ISO 9001, validation and tests according to CE, EMC 2014/30/EU, EN 60335-1:2002, EN 60335-2-103:2005, EN 16005, EN 61000-6-3:2007, EN 61000-6-1:2007, etc., grants us the quality and reliability required in each scenario.

SLIDING DOORS

Present architectural trends feature automatic doors as the key element for entering buildings and even for accesses to special rooms such as operating rooms or locked areas, giving them a modern and minimalist touch while being environmentally responsible, and without neglecting their main objective: to make it easier for pedestrians to pass through them.

micomDOOR[®] AUTOMATIC DOORS offers a wide range of automatic doors and door operators, as well as special designs and a range variety of profiles, colours and different kinds of finishes.

Whether you want to carry out a large project or a renovation for a particular client, MICOMDOOR has the right designs and models: single or double sliding doors, telescopic sliding doors that allow a greater optimization of the passage, sliding doors for emergency exits with or without an anti-panic mechanism, completely semicircular or circularly curved for entrances with an elegant design, hermetical for medical rooms or with particular requirements for the environment control, hinges to automate any type of pre-existing door, and even magnetic sliding doors with a reduced aluminium system which allows its installation in places where you want the operator to go unnoticed.



In addition, a large portfolio of different aluminium systems can be installed with all our sliding door operators. Whether you need a resistant daily use finish, or a more robust one for doors where there is a significant risk of impacts with suitcases or trolleys (such as in airport terminals), or a minimalist one where only the glasses are visible.

Each one of our aluminium carpentry allow the installation of rubber systems or furred systems to optimise their thermal insulation.

Our automatism are composed by: a high power, maintenance-free brushless motor, a control board and power supply inside an extruded anodised anti-parasite aluminium box, designed by our team, load bearing carriages with self-lubricating wheels and anti-sagging system, a neoprene timing belt transmission and customized extruded aluminium rail. Its mode selector allows switching between automatic, closed, single-exit, open, among other functions.

The installation and configuration are carried out with the greatest simplicity, being possible to regulate many configuration parameters. The system allows, among others, the configuration for speed, acceleration, percentage of partial opening, type of activation to allow compatibility to almost 100% of the sensors and the radars available in the market, with supervision of their functions according to the European standard EN 16005, etc.

In **MASTERINGENIEROS** INGENIEROS AUTOMÁTICAS, we manufacture custom-made for our customers, but we also have a series of operators for sliding doors with standard measures that we always keep in stock so that you can have your operator and your aluminium carpentry only in the time that takes the transport agency to deliver it.

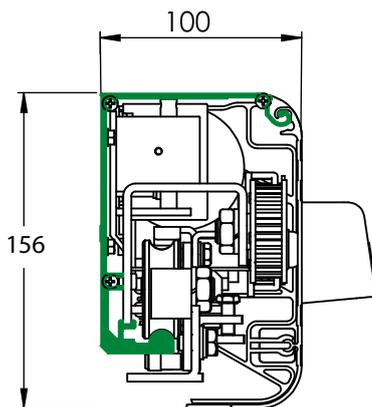
MI-50N

The MI-50 **micomDOOR**[®] AUTOMATIC DOORS operator is a best seller due to of its excellent relation between performance, reliability and price.

It is ideal for shop entrances, pharmacies, restaurants, hotels or other buildings where robustness and balance are a must. It guarantees durability because of its minimum maintenance requirements and its reliability has been proven for years.

Measuring 156 x 100 mm and featuring a high-level technology, it is an all-purpose operator capable of moving doors of up to 160 kg with opening speeds of up to 750 mm/s.

Equipped with a 50W brushless motor, switch mode power supply, EMI 1.3 controller and rail designed to bring the leaves close to the gravity center.



MI-100N

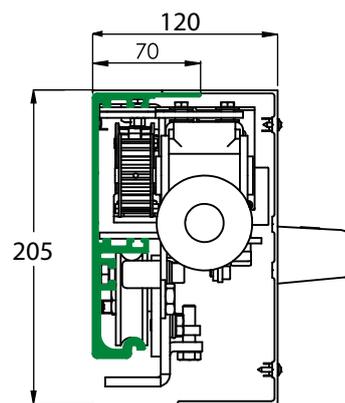
The MI-100 **micomDOOR**[®] AUTOMATIC DOORS operator is an operator designed to move large weights. All its mechanical and electronic elements have been designed with robustness in mind. Indeed, it can move weights of up to 350 kg.

It is ideal for shop's entrances, pharmacies, restaurants, hotels or other buildings where the size and weight of the leaves require extra power and resistance.

Guarantees durability thanks to it's low need for maintenance and proven reliability.

Measuring 205 x 120 mm and featuring a high-level technology, it is an operator for any use with capacity for moving doors of up to 350 kg and opening speeds of up to 500 mm/s.

It is equipped with a 100W brushless motor, switch mode power supply, EMI 1.3 controller and the rail has been designed to bring the leaves close to the gravity center.



SLIM-75

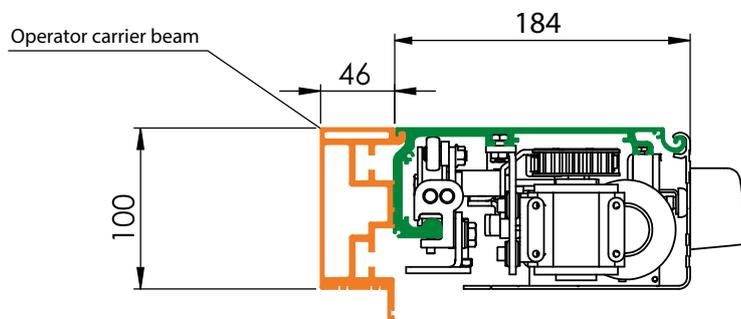
It has a stylish and modern design, a very quiet running, combining softness and robustness. Powerful at any speed, it also guarantees a level of safety that meets the standards required for emergency exits, without the need of expensive doors with an integral anti-panic system.

Its low height which is only 100 mm allows to optimize the available space for the glass. This compact design, together with the easiness of the installation process obtained with our operator support beam, allows it to be fixed between walls or side beams without the need of any other type of fastening.

Its durability is certified by more than 1 million maintenance-free openings, and its reliability in different scenarios has been more than demonstrated. It is ideal for spaces where an emergency exit is necessary, such as shopping centers, airports, train stations, etc. Places where the best performance in speed and safety are required.

Measuring 100 x 184 mm and featuring a superior technology, this operator can move doors of up to 220 kg with opening speeds of up to 820 mm/s.

It is equipped with a 50W brushless motor, switched power supply, EMI 1.4 controller and rail designed to minimize its aluminium system while maintaining its rigidity.



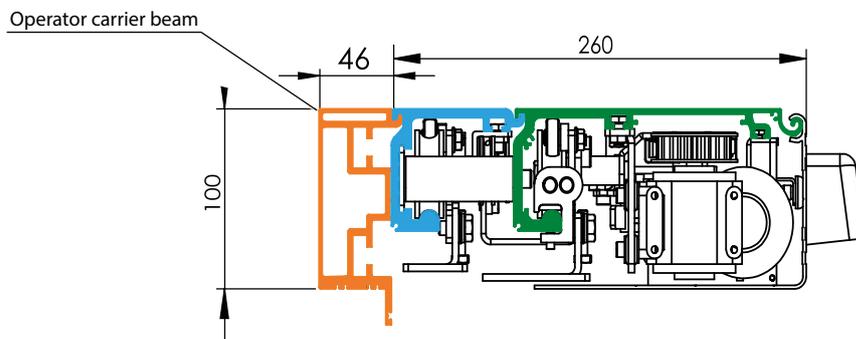
SLIM-75-TES

The SLIM-75-TES micomDOOR[®] AUTOMATIC DOORS operator is the perfect solution for small spaces, or when an extra free passage is required, providing 60% of free transit in relation to the door opening and 25% more than with a normal sliding door. It maintains a compact and careful design measuring only 100 x 260 mm, combining it with the elegance and versatility of a large passage.

The modern and elegant design recovers the features of the MICOMDOOR SLIM-75 operator.

This operator can move doors of up to 220 kg (4 telescopic leaves) with an opening speed of up to 820 mm/s.

It is equipped with a 50W brushless motor, switched power supply, EMI 1.4 controller and rail designed to minimize its profile while maintaining its rigidity.



MI-QF

The MI-QF **micomdoor**[®] AUTOMATIC DOORS operator has been designed along with the MI-LAB hermetic door to provide you with a highly reliable, efficient and durable automatic hermetic door.

It has been specifically designed for its use in areas where hygiene and environmental control are essential, including operating rooms, radiology areas, clean rooms and laboratories.

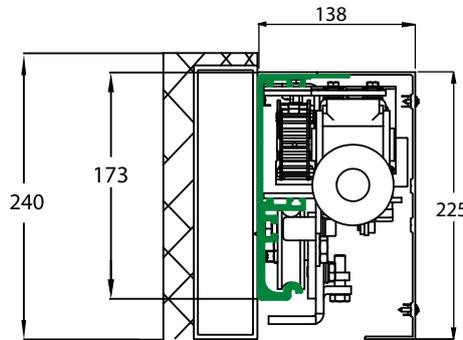
All of its elements have been designed taking into account the needs of these spaces and they provide a smooth and quiet operation.

Thanks to their excellent hermetical characteristics and highest levels of safety and hygiene, they provide the perfect solution for spaces requiring special insulation, such as the pharmaceutical, food or chemical industry.

The MI-QF operator and MI-LAB door combination has been certified according to UNE 85170:2016.

Measuring 225 x 138 mm and with a high-level technology, it can move doors of up to 375 kg with an opening speed of up to 750 mm/s.

It is equipped with a 200W brushless motor, switch mode power supply, EMI 1.4 controller and a rail designed so that the leaves are close to the gravity center.



MI-MAG MAGNETIC OPERATOR

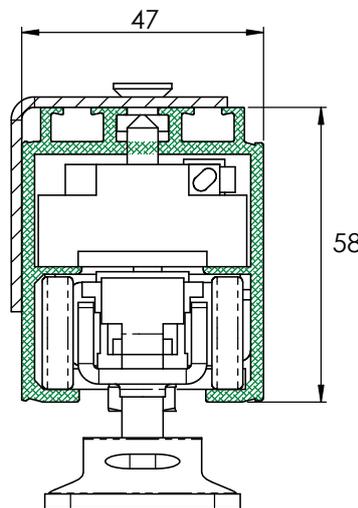
This ultra-quiet operator which has an almost invisible aluminium system is the best solution for offices, private homes and for the division of internal areas in buildings and offices.

It allows the automation of the glass leaves movement without turning the aluminium system of the mechanism into a visual obstacle as it only measures 58 x 47 mm.

The movement of the leaves is carried out thanks to a linear motor equipped with neodymium magnets, and it does not have pulleys or belts, so it is maintenance-free.

This operator can move leaves of up to 80kg, and its running always stays in low energy, so it does not require the use of safety sensors.

Its symmetrical design allows to install the same operator for both left or right hand openings or double doors. It can be combined with all our aluminium and glass systems.



OPERATORS

	MI-50N	SLIM-75 / TES	MI-100N	MI-QF
Power	AC100-240V 50,60Hz 2A	AC100-240V 50,60Hz 2A	AC100-240V 50,60Hz 2A	AC100-240V 50,60Hz 2A
Maximum usage	200W	200W	300W	400W
Speed	70~750mm/s (adjustable)	70~820mm/s (adjustable)	70~500mm/s (adjustable)	70~750mm/s (adjustable)
Motor	Brushless modulated direct current	Brushless modulated direct current	Brushless modulated direct current	Brushless modulated direct current
Gear-box	Endless Serew	Endless Serew	Endless Serew	Endless Serew
Control system	Microprocessor	Microprocessor	Microprocessor	Microprocessor
Brake control	Automatic	Automatic	Automatic	Automatic
Opening time	From 0 to 60 sg. (10 adjustable positions)	From 0 to 60 sg. (10 adjustable positions)	From 0 to 60 sg. (10 adjustable positions)	From 0 to 60 sg. (10 adjustable positions)
Door pressure for slits removal	It is possible to set a small force to keep the door either closed or open. Strength from 0 to 8 kg (5 adjustable positions)	It is possible to set a small force to keep the door either closed or open. Strength from 0 to 8 kg (5 adjustable positions)	It is possible to set a small force to keep the door either closed or open. Strength from 0 to 8 kg (5 adjustable positions)	It is possible to set a small force to keep the door either closed or open. Strength from 0 to 52 kg (9 adjustable positions)
Safety features	According to EN-16005 standard level C	According to EN-16005 standard level C and D (applicable to evacuation routes)	According to EN-16005 standard level C and D (applicable to evacuation routes)	According to UNE 85170:2016
Error detection	Warning and indication of the error type, via and acoustic signal and display.	Warning and indication of the error type, via and acoustic signal and display.	Warning and indication of the error type, via and acoustic signal and display.	Warning and indication of the error type, via and acoustic signal and display.
Reduced opening	10 positions from 5% to 90%.	10 positions from 5% to 90%.	10 positions from 5% to 90%.	✗
Emergency opening / Closing	It allows either the opening or closing before an emergency situation. It requires a 19.2V battery.	It allows either the opening or closing before an emergency situation. It requires a 19.2V battery.	It allows either the opening or closing before an emergency situation. It requires a 19.2V battery.	It allows either the opening or closing before an emergency situation.
Blocking	Optional (Electromagnetic lock)	Optional (Electromagnetic lock)	Optional (Electromagnetic lock)	✗
Battery	19V	19V	19V	✗
Operating temperature and humidity	Room temperature: from -20°C to +50°C (without any condensation or ice formation) Environmetal humidity: 30% to 85% (no harmful materials) in the room.	Room temperature: from -20°C to +50°C (without any condensation or ice formation) Environmetal humidity: 30% to 85% (no harmful materials) in the room.	Room temperature: from -20°C to +50°C (without any condensation or ice formation) Environmetal humidity: 30% to 85% (no harmful materials) in the room.	Room temperature: from -20°C to +50°C (without any condensation or ice formation) Environmetal humidity: 30% to 85% (no harmful materials) in the room.
Maximum weight of moving leaves	Single leaf door = 1 x 110 Kg max. Double leaf door = 2 x 80 Kg max.	Single leaf door = 1 x 160 Kg max. Double leaf door = 2 x 110 Kg max. 2 panel telescopic door = 2 x 80 Kg max. 4 panel telescopic door = 4 x 55 Kg max.	Single leaf door = 1 x 250 Kg max. Double leaf door = 2 x 175 Kg max.	Single leaf door = 1 x 250 Kg max. Double leaf door = 2 x 175 Kg max.



MASTERINGENIEROS PUERTAS AUTOMÁTICAS has, for a better service to their clients, a series of its own aluminium carpentry, of great hermeticity, which has been developed within the last years and that it is comprised of the following models:

CLAMP MODEL:

The clamp model gives to the entrance the maximum elegance and visibility of the interior.

In these entrances the aesthetics prevails over the resistance or the seal.

Especially recommended for buildings found in mild climates or for interior doors. Our Clamp model does not require gluing the aluminium system, avoiding long drying times and easing any replacement.

Glazing:

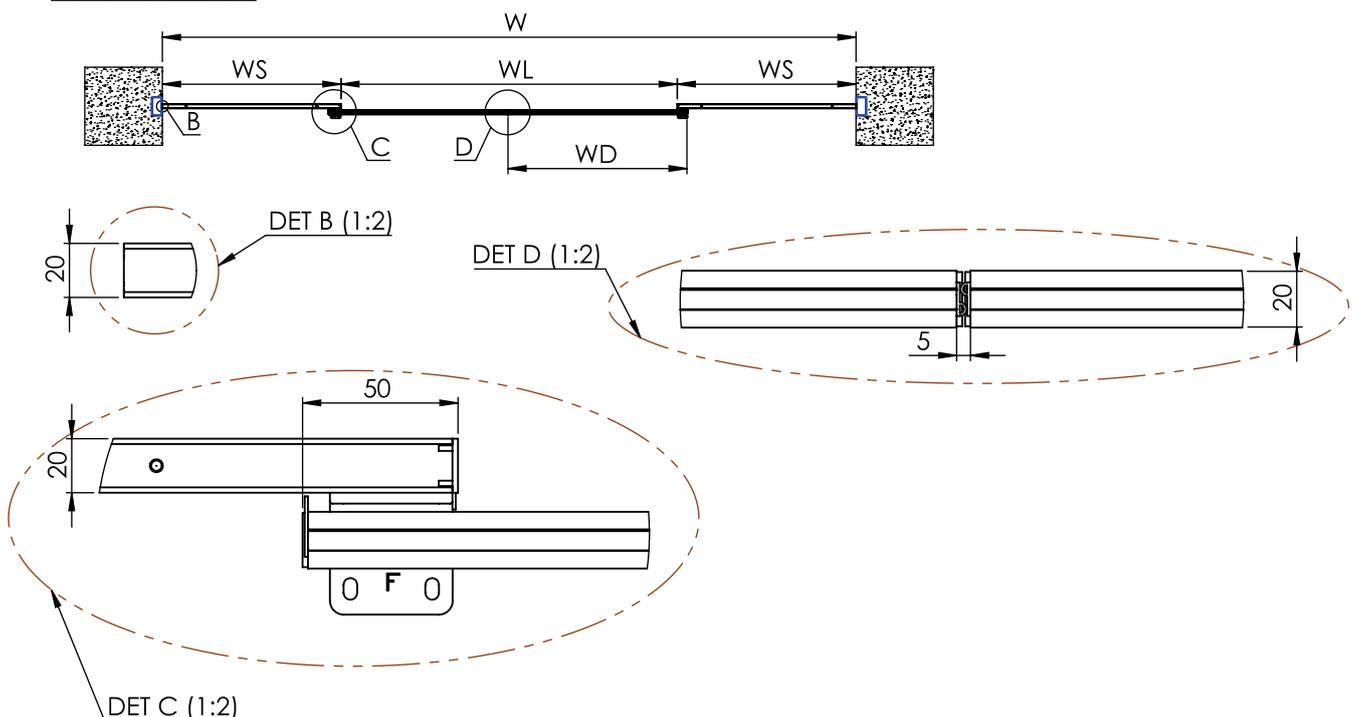
- Auto-hold clamps:
Laminated 5+5 / Temper 10mm
- Ral coting aluminium:
5+5 / 6+6 laminated
Temper 10 / 12mm

Aluminium systems finishing:

- Natural or coloured anodizing
- RAL-coloured lacquer
- Stainless steel lined AISI 304 / 316 satin / gloss



Horizontal section:



MI-25 MODEL:

Average carpentry of great hermeticity due to its joints and perimeter mats. It confers a great resistance to the leaf once it is joined to the glass.

This aluminium system can be covered with stainless steel, giving a distinctive touch to the installation.

It is compatible with all our operators and easy to install.

Glazing:

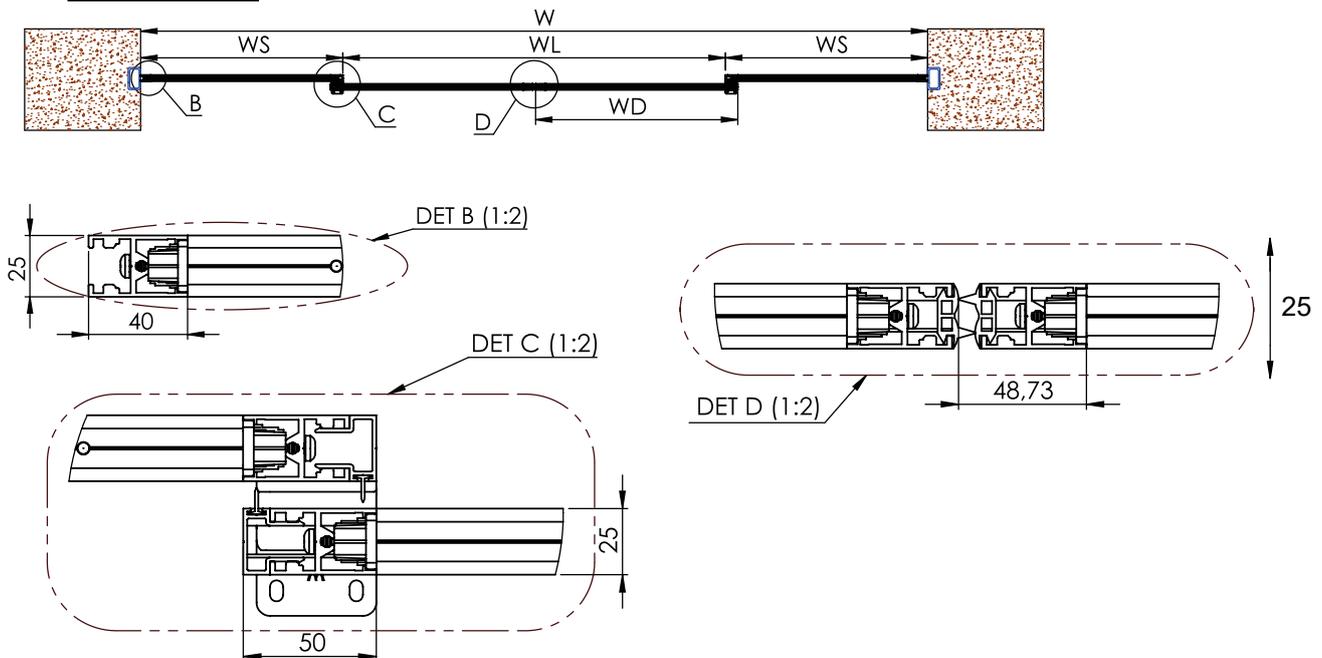
- 4+4 / 5+5 / 6+6 mm laminated
- Temper 8 / 10 / 12 mm

Aluminium systems finishing:

- Natural or coloured anodized
- RAL-coloured lacquer
- Stainless steel lined AISI 304 / 316 satin / gloss



Horizontal section:



FULL GLASS MODEL:

Thanks to its narrow aluminium systems, the Full Glass model offers a full range of brightness. At the same time, it offers a high level of hermeticity through its seals, and great aesthetics as it is made of a very thin aluminium system, being the glazing especially important.

This quick and simple assembly set is easily fitted to all our operators, adapting itself perfectly to any project.

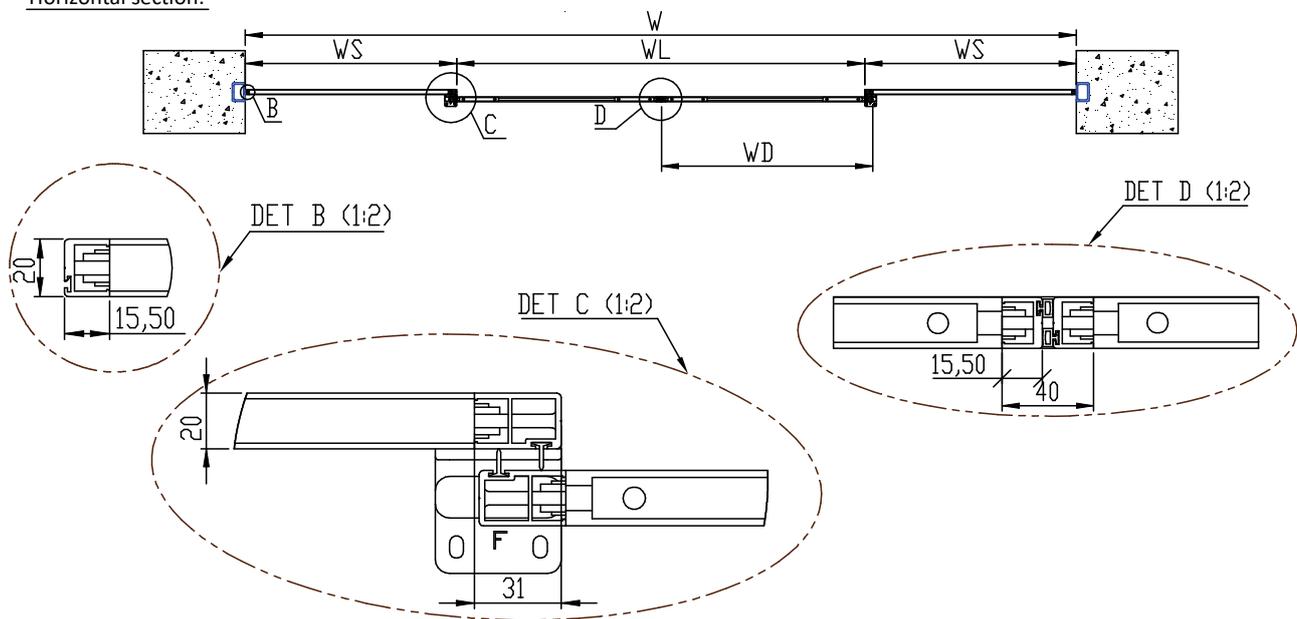
Glazing:

- 5+5 / 6+6 mm laminated
- Tempered 10 / 12 mm

Aluminium systems finishing:

- Natural or coloured anodized
- RAL-coloured lacquer
- AISI 304 / 316 satin / gloss

Horizontal section:



BW-52 MODEL:

These robust aluminium frame systems are ideal for busy entrances where impact damage is a problem.

This model is often used in large shopping centers, airports and hospitals where trolleys and wheelchairs are in use.

As it is a sturdy carpentry, it is suitable for areas where there are strong winds. It can also be fitted with double glazing, providing significant energy savings.

Glazing:

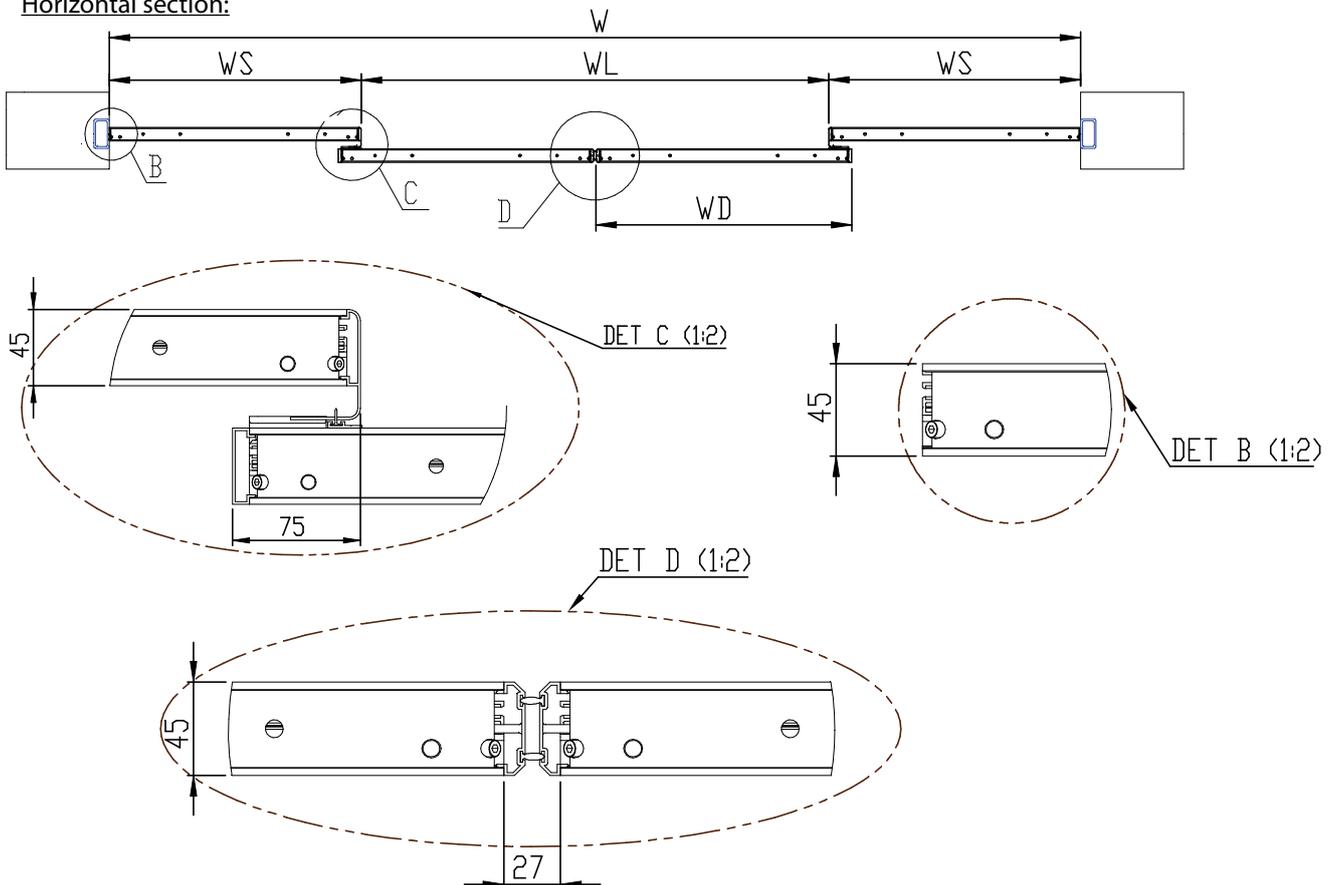
- Laminated / temper / insulated glass from 6 to 28 mm

Aluminium systems finishing:

- Natural or coloured anodized
- RAL-coloured lacquer
- Stainless steel lined AISI 304 / 316 satin / gloss



Horizontal section:

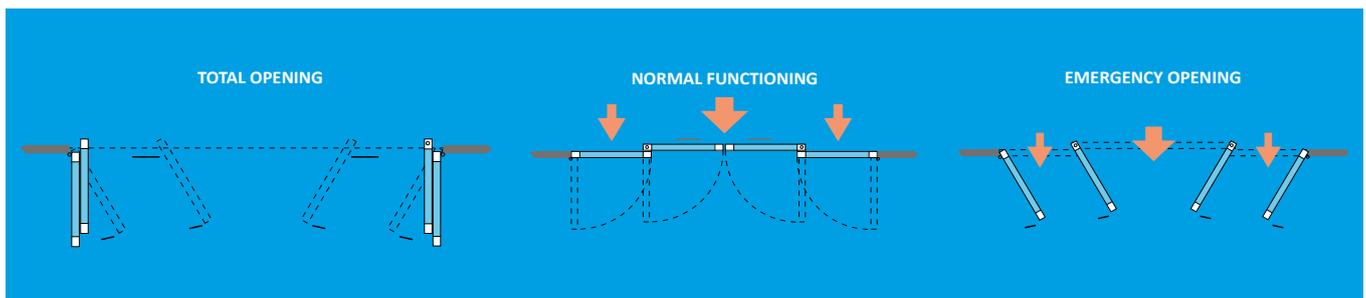


ANTI-PANIC DOORS

The automatic sliding **micomDOOR**[®] AUTOMATIC DOORS doors with an integral anti-panic system are designed to be installed in places where an emergency exit or escape route is necessary. These doors are equipped with a system that allows the movable and fixed leaves to open manually in the direction of the exit flow, in case of emergency. It meets as well the current EN 16005 standard.

Although the system is designed as an automatic emergency exit door, the large free passage space that it provides, makes it a perfect entrance and exit way for large objects (vehicles, furniture, etc.) The electronic unit incorporates an emergency opening system in the event of a power failure, as well as a connection to the fire alarm system and smoke detectors.

This door can be installed with the **MI-50**, **MI-100** and **SLIM-75** operators.



MI-94-AP MODEL:

This aluminium system is equipped with special fittings that allow the leaves to pivot in the direction of evacuation with a simple push. The leaves are folded on the sides to allow a wide free passage for evacuation in case of emergency or in the event of needing some extra passage.

They are especially recommended for airports, large surfaces or public buildings.

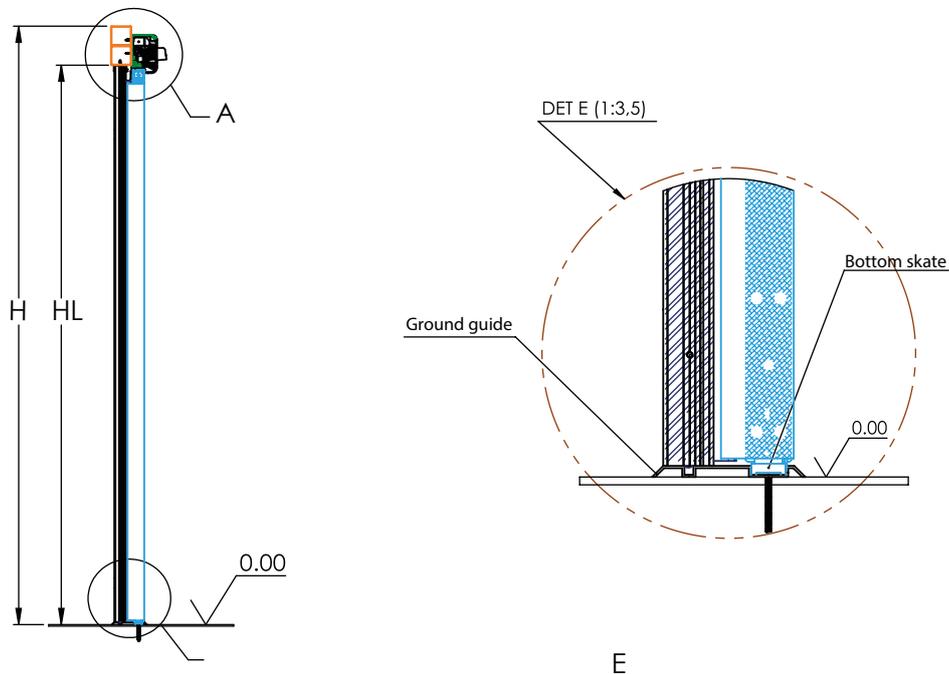
Glazing:

- 3+3 laminated
- Tempered 6 mm

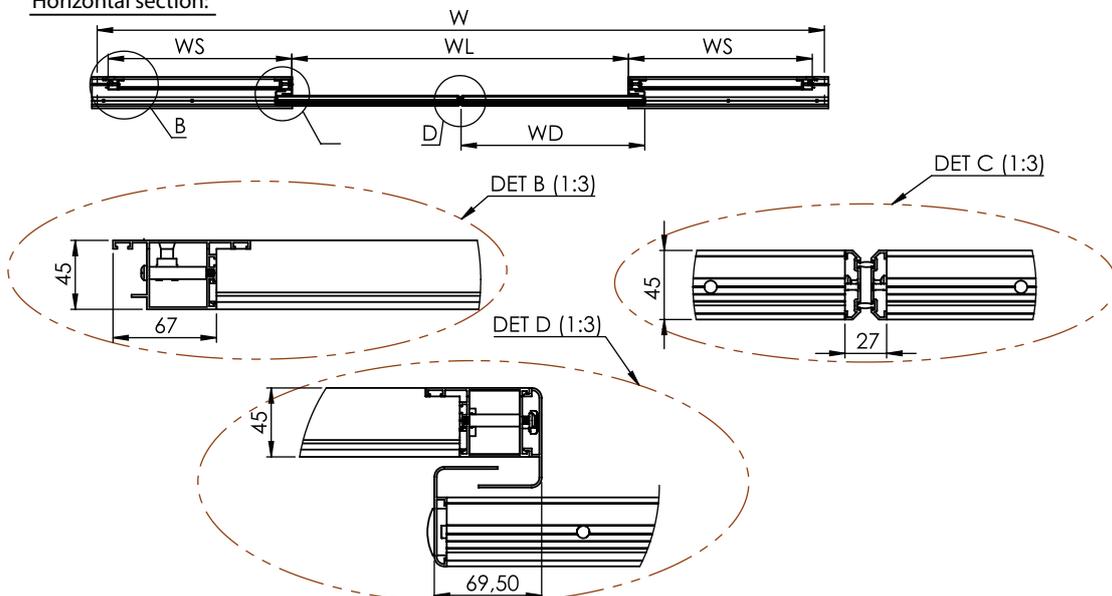
Aluminium systems finishing:

- Natural or coloured anodized
- RAL-coloured lacquer
- Stainless steel lined AISI 304 / 316 satin / gloss

Vertical section: Beam profile



Horizontal section:



HERMETIC DOORS

Our **MI-LAB** automatic and manual hermetic doors have been designed to guarantee the maximum safety, hygiene and hermeticity as well as providing a smooth, silent and very robust operation.

These doors are mainly used for sanitary purposes and are essential for keeping down contamination levels in rooms with a controlled environment, operating rooms, radiology rooms, clean rooms or laboratories. Thanks to their great hermeticity, MI-LAB doors are perfect for spaces that need special insulation, as for example, in industries such as pharmaceuticals, food or chemical ones.

The **MI-LAB** hermetic doors for hospitals meet all the standards required by the most rigorous European regulations, achieving their hermeticity thanks to deformable rubber systems that fit against the door frame.

Thanks to its ultra-smooth surface, it eliminates possible areas where bacteria could live, making cleaning easier and making it last longer.

As an option, a 40 x 40 cm sight glass (plumbed or normal) can be included to allow a glimpse of the interior without needing to open the door.

We have the following options available for different needs:

- HERMETIC DOORS FOR OPERATING ROOMS AND CLEAN ROOMS:

Designed and manufactured for environments where the key factors are hygiene and safety against environmental contamination. These doors save a valuable amount of space compared to hinged doors and, when they are working, they produce less air leakage. They are also suitable for environments where hygiene is a priority. In these doors, the door leaf is fully encapsulated against the frame and the floor.

- DOORS FOR RADIOLOGY ROOMS:

In addition to having the same hermetical characteristics as the previous ones, these doors offer a high degree of protection against X-rays, as they have lead foils on the inside designed just for this purpose.

- SEMI-HERMETIC SLIDING DOORS:

Designed and manufactured for environments where hygiene and safety against air contamination is important, but there is no need for complete hermeticity. These doors save a valuable amount of space compared to hinged doors and when they are working, they produce less air leakage, making them ideal for environments where hygiene is a priority. In these doors the door leaf does not fully engage with the frame and the floor.



HERMETIC DOORS: SLIDING DOORS

MI-LAB Sliding door:

This door consists of a hermetically sealed sliding leaf with the following elements:

- Perimetral profiling with extruded aluminium in matt anodized finish.

- 40 mm thick insulating inner core made of high density injected polyurethane (55 Kg/m³). Through the injection of polyurethane, it is ensured the maximum adhesion between elements, generating a compact behavior of great stability and resistance.

- Possibility of adding a lead shield and a plumbed sight glass.

- Stainless steel/HPL exterior plate easy to clean suitable for hospital environments with a high resistance to the usual chemicals.

- Direct connection to the ground to discharge static electricity at any point of the course.

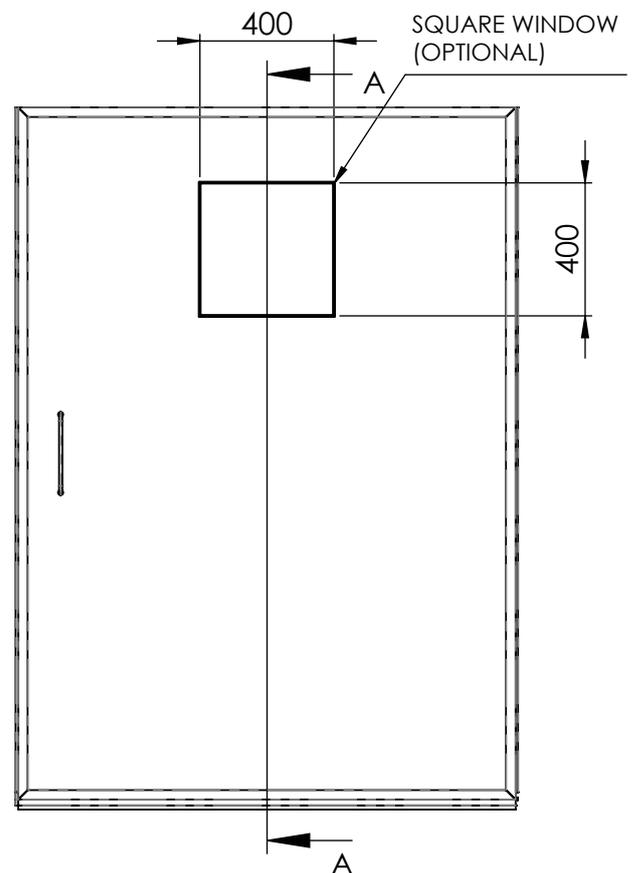
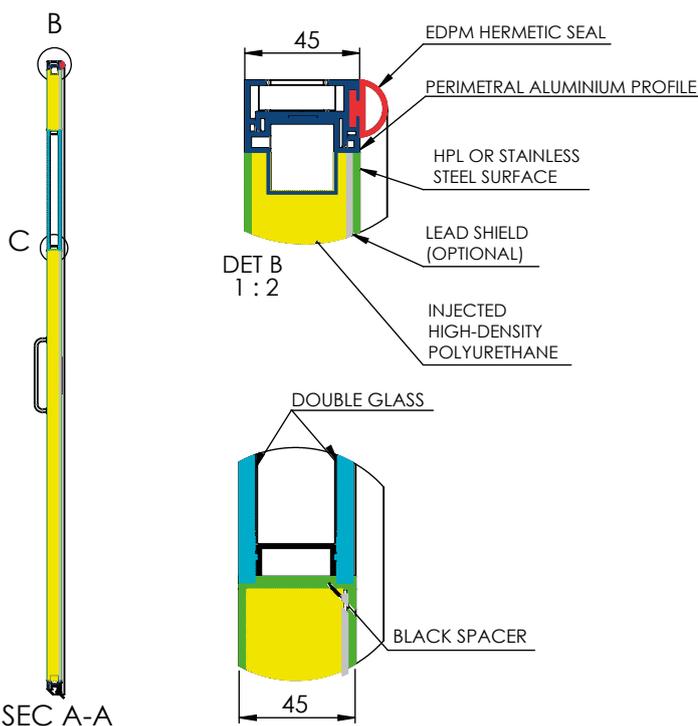
- Hermetical and perimetral rubber in EDPM, which provides flexibility and resistance to the compression process that facilitates cleaning.

- Hermetic frame that can be installed in one or both sides of the wall. This is optional. It is made up of vertical and horizontal aluminium systems finished in aluminium / stainless steel.

- 400x400x45 mm square window (optional) with double glass assembled in an insulated glass with a black finishing, completely hermetic and flushed with the surface.

- Exterior handlebar with tubular shape and inner recessed handlebar, finished in stainless steel; to allow the manual activation of a hermetic leaf.

- The design and manufacture meets the UNE 85170:2016 standards.



HERMETIC DOORS: SWING DOOR

MI-LAB Swing door:

This door consists of an hermetic swing leaf composed by the following elements:

-40mm thickness perimetral profiling made of extruded aluminium, with a matt anodized finishing.

-Insulating inner core of 34 mm thick (standard) high density injected polyurethane (55 kg/m³). The injection of polyurethane ensures the maximum adhesion between the components, making the door very compact, highly stable and with resistant performance.

-Possibility of adding a lead shield and a plumbed sight glass.

-Stainless steel/HPL exterior plate easy to clean suitable for hospital environments, with high resistance to the usual chemicals.

-Direct connection to the ground to discharge static electricity at any point of the course.

-It's possible to lock with an electric lock.

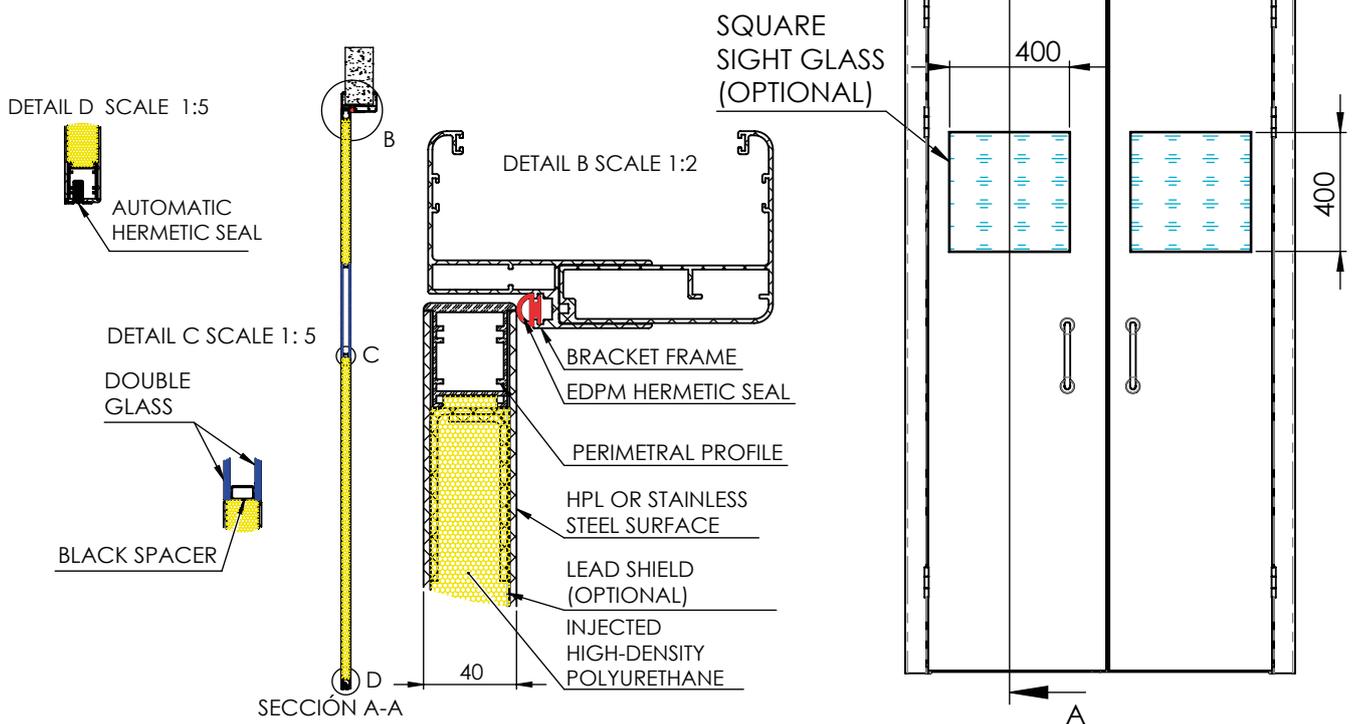
-Hermetical and perimetral rubber in EDPM, which provides flexibility and resistance to the pressure process that facilitates cleaning.

-Hermetic frame made of vertical and horizontal aluminium systems finished in aluminium / stainless steel.

-400x400x40 mm square window (optional) with double glass assembled with a black-finish insulated glass, completely hermetic and flushed with the surface.

-Exterior and interior handlebar with tubular shape, and a stainless steel finishing enable the hermetic leaf to be manually operated.

-The design and the manufacture meet the UNE 85170:2016 standards.



SWING DOORS

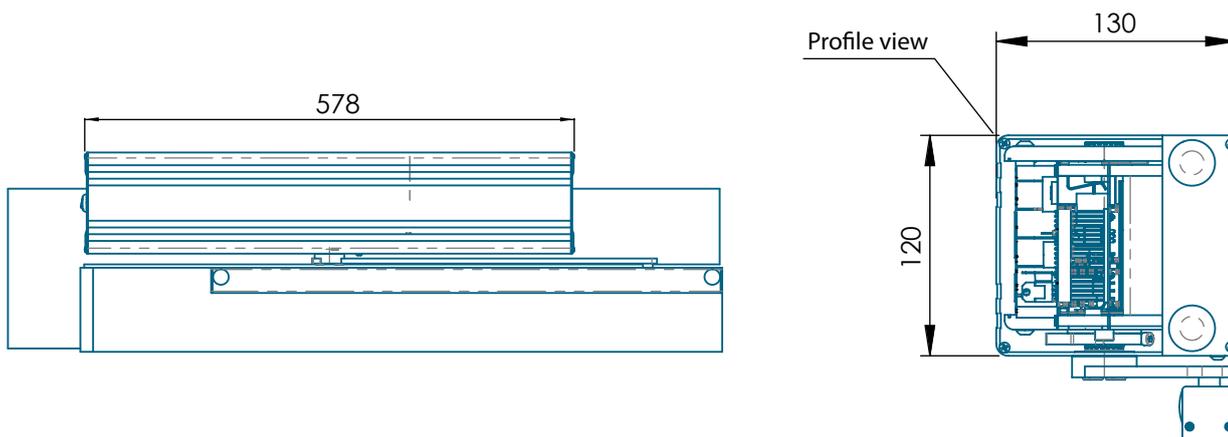
Our MI-SW and MI-SWSP operators for swing doors allow you to automatize the access in a natural way, using the pre-existing swing doors or installing new ones, which in addition to the automatic mode, can work at the same time as manual doors. This provides new possibilities by extending the range of users and facilitating passage for people with reduced mobility.

The MI-SW operator has been designed to offer a wide variety of applications for both interior and exterior doors. It can be assembled on either side of the door without the need for any equipment changes. It is suited for single or double doors, equipped with hinges or pivoting points.

With an articulated push arm for when the operator is installed on the opposite side of the opening and a sliding pull arm for when the operator is installed on the same side as the door's opening. It has been designed to meet the most stringent safety standards and can be combined with the various safety systems that we offer while being certified for emergency exits / escape routes according to the EN 16005 standard.

Controlled by a powerful DSP (Digital Signal Processor) microprocessor that guarantees total control over the door at any time, it has a self-learning mechanism, self-configured speed and standard parameters of its movement, so it is not necessary to make adjustments to set it up. There is, as well, the possibility of manual configuration if necessary. This makes it faster and easier to assemble.

With fast opening up to 75°/s, for weights up to 250kg and continuous use, the opening and closing movements are carried out by a 24VDC motor which transmits its efforts to the door leaves through an ingenious and powerful reducer formed by a worm/toothed screw. It transmits a smooth, vibration-free and super-quiet movement. The articulated or sliding arm (depending on push or pull opening) receives the movement transmitted by the reducer.



The MI-SW/SWSP operator software incorporates several functions. Among them, we can highlight the PUSH & GO, double leaf with no need of extra electronic plates, its self-control function that prevents the leaves from overlapping, automatic change to manual mode when it detects that its movement is forced, its LOW ENERGY mode that activates just indicating the weight and width of the leaf (the operator opens/closes at low speed and does not need safety sensors). In addition its connection plate is very versatile, as it allows the use of different activation elements, emitters, tags, proximity cards, proximity keys, etc.

As with our sliding door operators, our MI-SW and MI-SWSP swing doors are made up of an aluminium base on which a gear motor, electronic plates and power supply are assembled, located in an anti-parasite extruded aluminium box.

- Access control: by simply connecting an electronic card (optional). No need for wiring, we convert the operator into an access control, which incorporates a system of changing codes with encryption.
- Battery kit (optional) for operation in case of power failure.
- Power supply for electric locks configurable in FAIL SAFE / FAIL LOCK operating mode. We also have an interconnection plate with pre-installed door openers.
- Includes 3-position selector: open, manual and automatic.
- 6-position digital selector (optional).
- There is a model with automatic closing spring in case of power failure (optional).
- Hermetical and plumbed door operator models available
- Valid for emergency exits according to the EN 16005 standard.
- Its durability has been proven for over 1 million cycles.

SWING DOORS

The features of these two systems are the following ones:

	MI-SW	MI-SWSP
Spring closing	NO	YES
Arm system	Sliding or articulated	
Push&Go	Yes (adjustable)	
Power supply	AC 230/110V ; 50/60 Hz, 2A	
Opening speed	15-75°/s	
Operators weight	9 kg.	
Control system	Microprocessor	
Brake regulation	Automatic	
Opening time	0-60 seconds (10 positions)	
Gap elimination force	A small force can be applied in order to keep the open or closed. From 0 to 8 kg. (5 positions)	
Safety features	According to the EN-16005 standard level C and D (applicable for escape routes).	
Error detection	Warning and indication of error type by means of an acoustic signal and written display	
Number of cycles	Continuous service.	
Lock type	Electric lock 12/24 Vdc (optional)	
Operating temperature and humidity	Ambient temperature: -20°C to +50°C (without condensation or freezing) Ambient humidity from 30% to 80% (there must be no hazardous materials in the environment)	
Maximum opening angle	110°C (adjustable)	
Maximum weight	250 kg.	
Measurements	120 x 130 x 570 (Height x depth x length)	
Weighted sound power level A	Lpa ≤70dB (A)	
Type of use	For indoor use, should not be used outdoors unless it is mounted with an enclosure that guarantees a minimum IPX4 grade. The manufacturer is not responsible for outdoor installation	



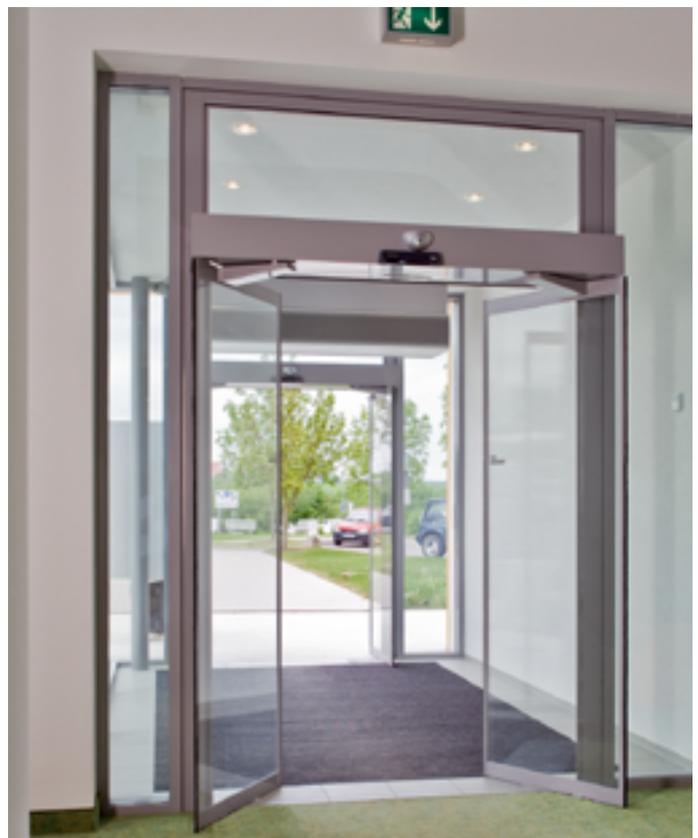
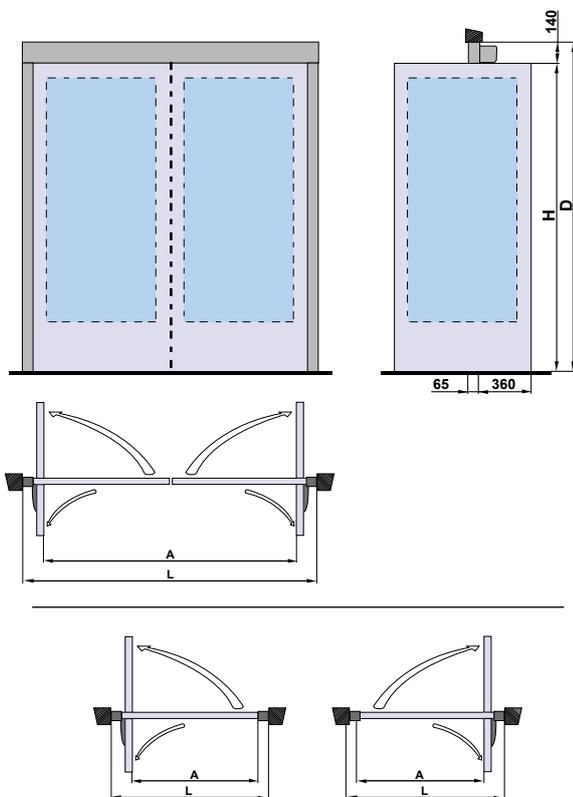
SLIDING DOORS: BALANCE DOORS

Our balance door system for **MI-SW and MI-SWSP** operators is specially designed by a combination of sliding and swing door, resulting in a unique door type for unique locations.

The use of this type of door is ideal for places where space is limited.

With this door, the sensation of opening when we approach it is very pleasant, since at the same time they swing, and turn. The door does not use any type of floor guide that might require periodic maintenance or that might produce tripping, since it is completely suspended from its iron fittings.

The aluminium systems can be lacquered or anodized.



CURVED DOORS

The MI-100-RD **micomDOOR**[®] AUTOMATIC DOORS operator for curved doors gives a distinctive touch wherever it is installed. Available in both double and single (circle or semi-circle) versions, it differs from similar ones because it leaves the roof free, which provides greater aesthetics and décor and greater integration with the rest of the set, as well as a wide opening.

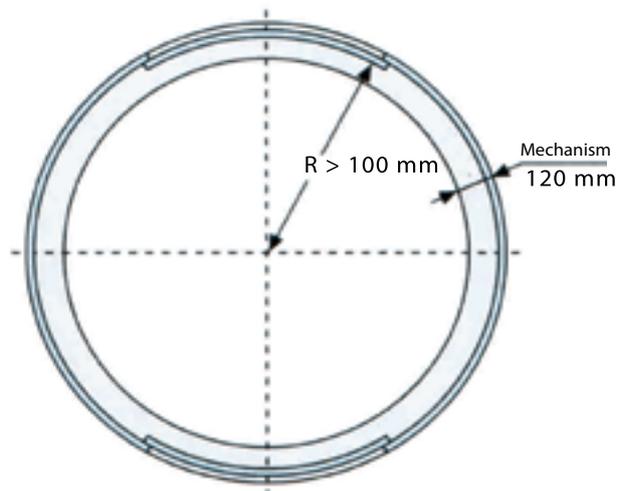
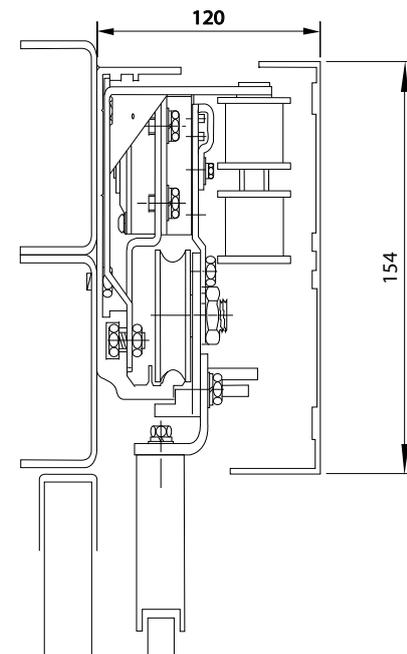
Its curved shape can be adapted to the client's needs. It is ideal for entrances to hotels, lounges, museums, public offices or other buildings where a differentiating and classy touch is desired and it has a guarantee of durability due to its minimum maintenance requirements and its proven reliability.

With a size of 154 x 120 mm and high level electronics, it is an operator for any use with the capacity to move doors of up to 180 kg with opening speeds of up to 500 mm/s.

It is equipped with a 100W brushless motor, EMI 1.3 controller and extruded aluminium curved rail.

The partial opening selector allows to adjust the opening of the door, opening partially when the traffic is reduced and opening the whole door when the traffic increases, achieving savings in heating and air conditioning costs. The partial opening can be adjusted between 25% and 75%.

This model is available in a variety of materials - from aluminium, stainless steel, to brass, etc. Thanks to our experience and production capacity, we can manufacture the curved door in short periods of time.



CURVED DOORS

	TECHNICAL FEATURES
Power Supply	AC 100-240V 50,60Hz 4Amp
Maximum power consumption	200W
Speed	70 - 500mm/s (adjustable)
Motor	Brushless modulated direct current
Reducer	Worm screw
Gear-box	Microprocessor
Brake control	Automatic
Opening time	From 0 to 60 s. (10 adjustable positions)
Door pressure for slit removal	You can configure a small amount of force, to keep the door closed or open. Force from 0 to 8 kg. (5 adjustable positions)
Safety features	During the opening movement: it remains stopped. Returns to normal operation when a sensor is activated, or 10 sg elapsed.
	During the closing movement: it opens, then it closes again at a low speed. It returns to normal operation when a sensor is activated, or 10 sg elapsed.
Failure detection	Warning and indication of the type of error, through an acoustic signal and on display.
Reduced opening	10 positions at a reduced opening. From 5% to 90%.
Emergency opening / Closing	It allows the opening or closing process in an emergency situation. A 19.2V battery is included.
Lock	Optional (Electromagnetic lock)
Operating temperature and humidity	Room temperature: from -20°C to + 50°C (without any condensation or ice formation) Room humidity: from 30% to 85% (no hazardous materials in the room).
Maximum weight of moving leaves	Double leaf door: 2 x 90 kg. max.



ACCESSORIES



Radar mod. 3H-IR14C
Dual technology, infra-red detection and active infrared curtain. Meets the EN 16005 standards.



Radar mod. SSR3 unidirectional detection. Meets the European standard: norm EN 16005 level D emergency exit.



Radar mod. FLEX-T with double technology detection and active infrared safety curtain. The safety curtain passes through the door for added safety. Meets the EN.16005 standards.



Radar mod VIO-DT1 and DT2 bidirectional. Dual microwave detection technology, with active infrared curtain safety. Meets the EN 16005 standard.



Radar mod. OA-AXIS T



Radar mod. IXIO-DT3 unidirectional detection Meets the European standard: EN 16005 level D emergency exit.



Colibri I and II unidirectional and bidirectional detection radar.



Safety detector mod. 4SAFE monitored.



Safety edge mod. OA-EDGE T M 700. Monitored, EN 16005, level D and emergency exit



Stainless steel elbow push button.



Hands-free push button mod. PML is activated in a proximity from 10 to 50 cm.



Intelligent programmer MI-TOUCH sliding selector.



SLD5 digital control selector 6-positions.



MI-Contact selector



Rotary maneuver selector A5 5 position.



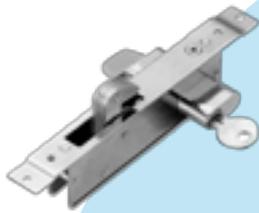
MCRS-2 electromagnetic lock.



MI-SW lock.



MCRS-1 electromagnetic lock.



Golden Peak lock.



Surface/back-mounted contact lock.

OTHERS:

- Radar holder for roof-ceiling water protection.
- Elastic kit (CO48) France.
- Digital Selector SWD5 for swing door 6-positions.
- Radar water protector.
- Numeric keyboards.
- A4 wireless sliding door selector 4-positions. It includes a remote control.
- MICROCELL security cell.
- Emergency push button.
- Emitters and receivers.
- Biometric fingerprint reader.

COMPLETE SERVICES FOR ENTERPRISES AND PROFESSIONALS

In Máster Ingenieros we always put our clients first and make sure that the relationship with us is always satisfactory. To achieve this, we count with a large and experienced team of professionals who meet the needs of our customers, including a 24-hour repair guard service.

In addition, our sales and engineering team is always ready to answer to your questions, so as to offer the best advice and attention that you may need. It is also possible to do so in English, French and Spanish, thus giving us access to a very wide global market.



MANUFACTURING

We can make the door that you need and just the way you imagined it. We also have in stock our most popular products for immediate delivery.



INSTALLATION

We have experts in the assembly of all types of glass doors: sliding, curved, telescopic, integral anti-panic, swinging, etc. We count with our own installers and national and international associates to assemble your door wherever you need it. Consult our sales team for advice and to find the best qualified technicians if you do not already have them.



REPAIR, FITTING AND MAINTENANCE

We have highly qualified professionals in the repair of all types of automatic doors. Don't wait until your automatic door starts to fail or stops working. Good maintenance can save you concerns and money. Máster Ingenieros performs a scheduled maintenance by a maintenance contract.



COMPLETED PROJECTS



Torrecárdenas Hospital, Almería.



Sofitel Hotel, Plaza de España, Madrid.



Porto Pi Mall, Palma de Mallorca.



Quirón Salud Hospital, Murcia.



Carrefour Mall, Madrid.



Champion Supermarket, Cuenca.

COMPLETED PROJECTS



Adolfo Suarez Airport, Madrid-Barajas.



Alcampo Mall, Valencia.



Seat Dealership, Valladolid.



General Óptica, Murcia.



Feuvert, Madrid.



General Hospital, Albacete.

COMPLETED PROJECTS



Melia Hotel, Almería.



Mesa del Castillo Hospital, Murcia.



NH Abascal Hotel, Madrid.



San Juan de Dios Hospital, Bilbao.



Carrefour Mall, Gandía, Valencia.



Seat Dealership, Madrid.



MASTERINGENIENOS PUERTAS AUTOMÁTICAS WOULD LIKE TO THANK OUR TEAM FOR THE WORK PERFORMED, WHAT HAS ALLOWED US TO GO THIS FAR. WE WOULD LIKE TO THANK THEM FOR JOINING FORCES TO ACHIEVE THE SAME GOAL, AND FOR HELPING US TO BE ACKNOWLEDGED AS ONE OF THE MOST EFFICIENT AND COMPETITIVE COMPANIES IN THE AUTOMATIC DOOR MARKET.

THANK YOU.



micomDOOR[®]

AUTOMATIC DOORS



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