Linear Engine

AUTOMATIC DOOR DRIVE UNIT

MM30 MM50 MM100

KENWA
Open to new possbilities

MICOM AUTODOOR

Linear Engine: the door to a new era.

Linear engine is a new mechanism for automatic door which is driven from the attraction or repulsion between the magnet and coil.
Since points of friction are significantly reduced, it makes the door opening and closing in unprecedentedly smooth and quiet way.

3 models are available for different purpose.

These three models could meet different workplace such as residential apartments, office building, hospitals, welfare facilities, factories, etc, and all other various uses.
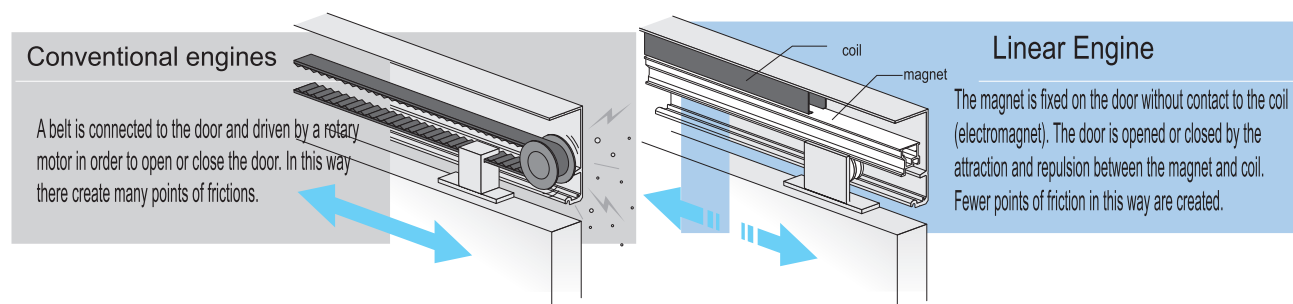
MM 100
▸ P 5

MM 50
▸ P 7

MM 30
▸ P 9

Operating principle

Conventional engines

A belt is connected to the door and driven by a rotary motor in order to open or close the door. In this way there create many points of frictions.

Linear Engine

coil
magnet

The magnet is fixed on the door without contact to the coil (electromagnet). The door is opened or closed by the attraction and repulsion between the magnet and coil. Fewer points of friction in this way are created.

L I N E A R   E N G I N E

Quiet and smooth opening and closing

The mechanism of linear motor makes the door opening and closing in unprecedentedly super smooth and quiet way.

comparison of operating noise (unit:dBA)

Linear engine automatic door	47 ※
Telephone bell	70
Quiet office	50
Library	40

※ This is the factory test results of MM50 single door . (It's tested 1m from the test object)

It seldom produces powder dust and make the environment clean

Since fewer points of friction, It is suitable for clean rooms, food factories, and other place which is dust and dirt sensitive.
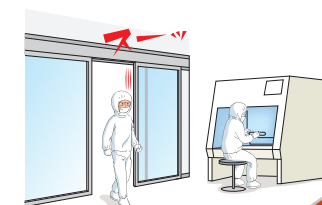
Highly safe return function

It can always detect the move speed of the door, and return the door reversely when the door hit the body or obstacles to ensure safety (safety return).

Function properly under power outage and other emergencies

Since the magnet is fixed on the door without contact to the coil (electromagnet), it can be used as a manual door when power outages and other emergencies happen.

Manual start-- convenient assist function

After moving the door to direction of opening about 2cm, the door will open automatically, and after a certain time, the door will close automatically. Ideal for home and hospital use.

※ This function is a standard setting for MM50 and MM30, but not for MM100.
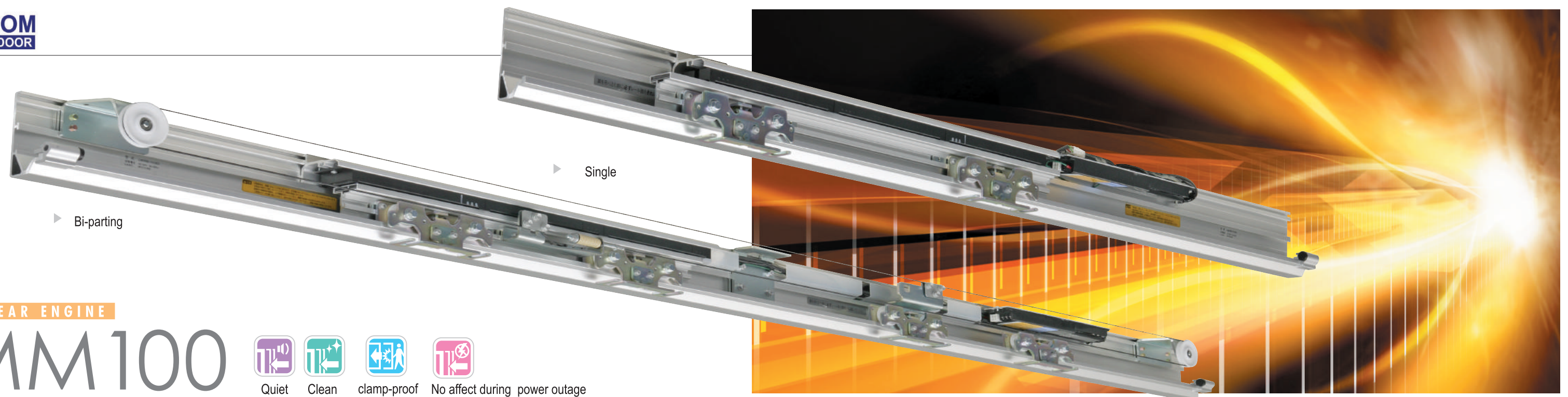
MICOM AUTODOOR

Versatile application.
Linear engine could be widely spread.

For example, it demonstrates its quiet and safe feature when it's used for residence, offices and hospitals, while it demonstrates its no-dust feature when it's used for factory clean rooms.
With comprehensive advantages, linear engine automatic doors have been installed in many places and will extend its application to an even bigger market.

Residence entrance

Living room MM30

Residence apartments

Mansion entrance MM100

Office building entrance MM100   Office entrance MM100 MM50   Meeting room MM50

Smoking room MM50

Office building

LINEAR ENGINE

Store

Store entrance MM100

Factory Lab

Meeting room MM50   Clean room MM50   Prefabricated freezing storage ※

Hospital・Public welfare・Facilities

Living room MM50   Clinic MM50   Multifunction toilet MM50

※ Please contact us for any special requirements.

MICOM
AUTODOOR

▶ Bi-parting

▶ Single

LINEAR ENGINE
MM100

Quiet Clean clamp-proof No affect during power outage

Recommended place for installation

Mansion
Store
Office Entrance
Factory

Office entrance

Shopping Entrance

Applicable the heavy door

It can open a single door of 30-90Kg or a Bi-parting door of 25-75Kg. It is extremely ideal for exterior doors

Quiet and smooth

Since the door is driven by a linear motor, it can be opened or closed in extremely quiet and smooth way.

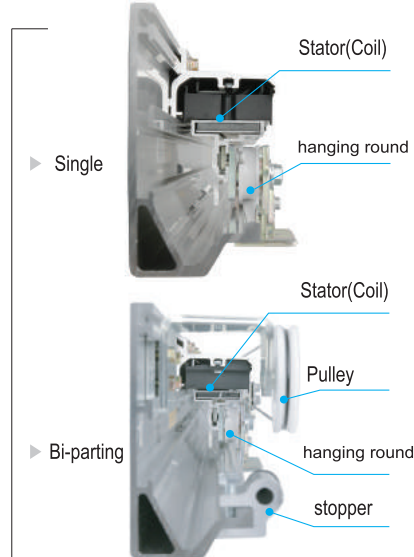### Electronic locks compatible

If you use specialized electronic lock (referring to page 10) and combined with the card reader, you can create an enter management system.
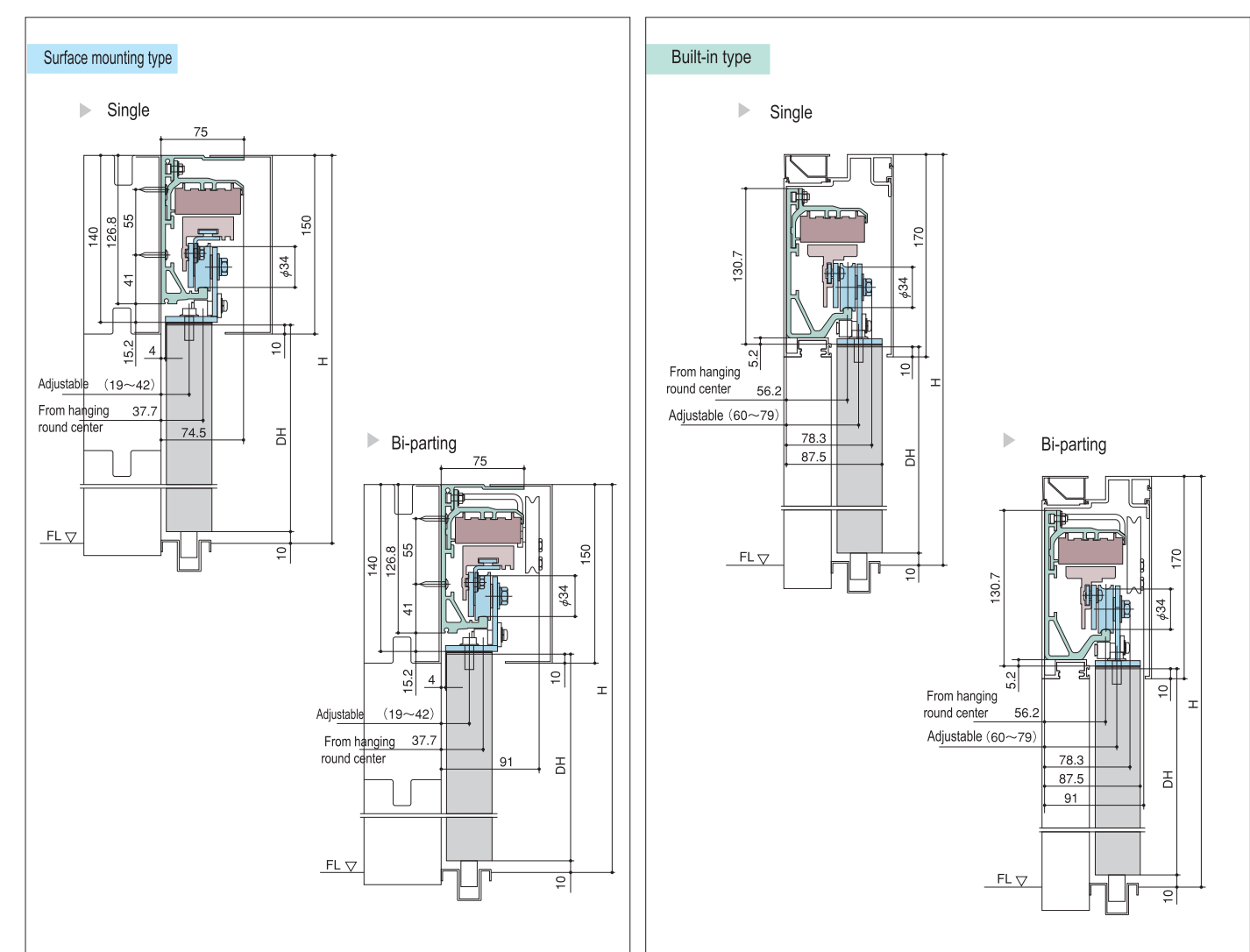
Specifications

Model			MM100
Required power capacity			AC100V 10% 50/60Hz MAX: 7A
Operating temperature			-10 ~ 40 ℃
Power consumption	Average when operating		0.41Wh /Once（Bi-parting. Door weight: 75kg / Door)
	Standby	No pushing force	2.1W (Starting sensors and auxiliary sensors are not included)
		Under pushing force	7.6W (Starting sensors and auxiliary sensors are not included)
Motor type			Magnet brushless DC linear motor movable type
Thrust generation			When three stators are all fully lapped: 136N
Door weight	Single		30 ~ 90kg / Door
	Bi-parting		25 ~ 75kg / Door
Door width	Single		＞700mm (If the electric lock equipped : ＞830mm)
	Bi-parting		＞650mm
※ Self Weight	Built-in type	Single	About 12kg
		Bi-parting	About 18kg
	Surface mounting type	Single	About 12kg
		Bi-parting	About 19kg
Opening speed			0.2 ~ 0.5m/sec (set default : 0.4m/sec)
Closing speed			0.2 ~ 0.5m/sec (set default : 0.3m/sec)
Hold open time			1 ~ 11 seconds (set default : 3sec)

※ Weight may vary depending on rail length.

Section

▶ Single
Stator(Coil)
hanging round

▶ Bi-parting
Stator(Coil)
Pulley
hanging round
stopper

Section

Surface mounting type

▶ Single
75 · 140 · 126.8 · 55 · 41 · 150 · φ34 · 10 · H · 15.2 · 4 · Adjustable （19～42） · From hanging round center · 37.7 · 74.5 · DH · FL ▽ · 10

▶ Bi-parting
75 · 140 · 126.8 · 55 · 41 · 150 · φ34 · 10 · H · 15.2 · 4 · Adjustable （19～42） · From hanging round center · 37.7 · 91 · DH · FL ▽ · 10

Built-in type

▶ Single
130.7 · 170 · φ34 · 10 · H · 5.2 · From hanging round center · 56.2 · Adjustable（60～79） · 78.3 · 87.5 · DH · FL ▽ · 10

▶ Bi-parting
130.7 · 170 · φ34 · 10 · H · 5.2 · From hanging round center · 56.2 · Adjustable（60～79） · 78.3 · 87.5 · 91 · DH · FL ▽ · 10

LINEAR ENGINE

MM50/80

Quiet   Clean   Clamp-proof   Assist function   No affect during power outage

Recommended installation areas

Office building
- Meeting room
- Smoking room
- Office entrance

Hospital & Welfare facilities
- Living room
- Clinic
- Multifunctional toilets

Factory
- Clean room
- Meeting room

Public facilities
- Multifunctional toilets
- Child room

Office entrance

Living room

Assist function

After moving the door to direction of opening about 2cm, the door will open automatically, and after a certain time, the door will close automatically.

Highly safe return function

It can return the door immediately to a reverse direction when the door hit the body or obstacles during its opening.

Electronic locks compatible

If you use specialized electronic lock (referring to page 10) and combined with the card reader, you can create an enter management system.

Automatic type and assist type

This model includes 2 types: Automatic type and assist type
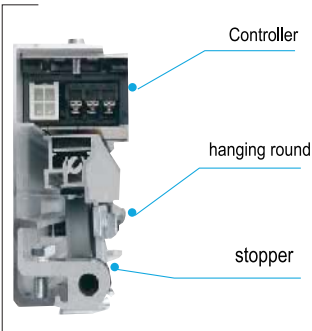You can choose for your purpose.

Function	Automatic type	Assist type	Description
Assist function	Standard	Standard	Manually move the door by 2cm, the door will automatically open.
Hold full open	Standard	Standard	Withstand the door fully open for more than 3 seconds, the door will keep at the opening status.
Free stop	Standard	Standard	When the door is pushed back manually by 80mm during its opening, the door will stop at any position.
Half open	No	Standard	Adjust the opening scope by adjusting the knob between half-opening and full-opening.
Safety Stop	Standard	Standard	When the door detects the obstacle continuously by 2 times at the same position, the door would automatically stop for safety.
Equipped with electronic locks	Option	No	Choose to install electronic locks.
Synchronized opening	Standard	No	Use two engines to form the Bi-parting door.

Specifications

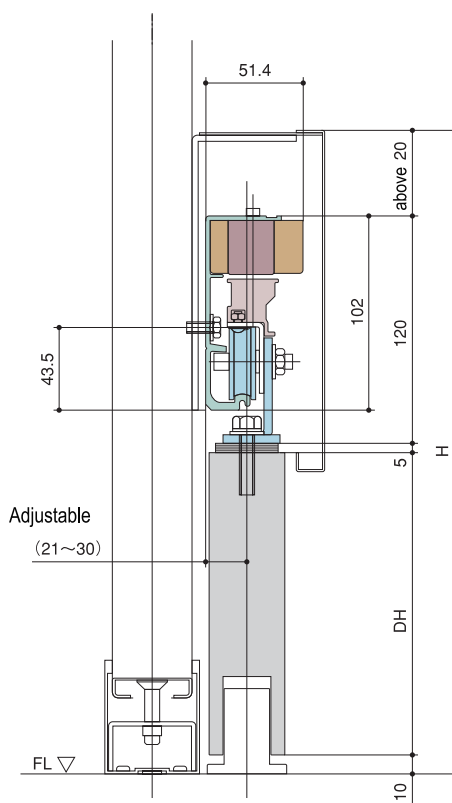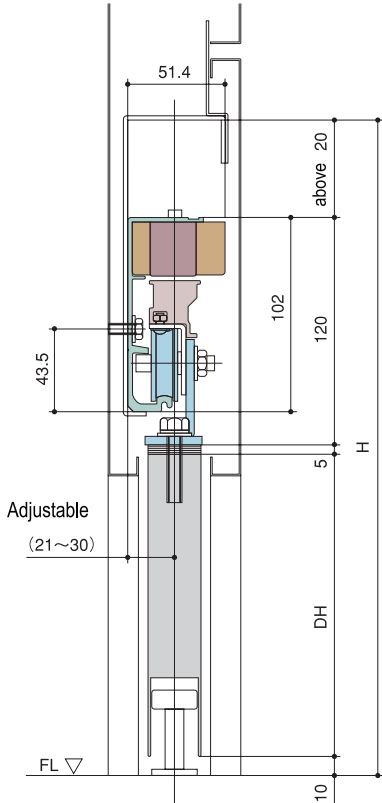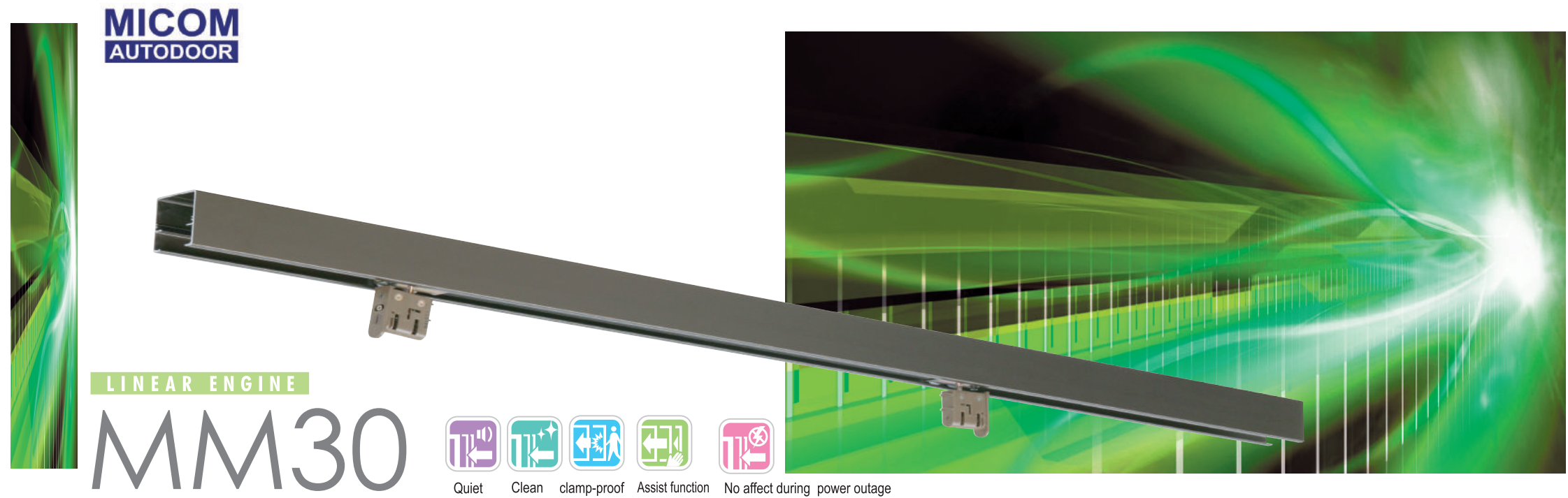| Model			MM 50	MM 80
Required power capacity			AC100V 10% 50/60Hz MAX: 4A	
Operating temperature			-10 ~ 40 ℃	
Power consumption	Average when operating		0.2Wh/Once（Door Weight: 50kg/door for MM50, 80kg for MM80 /door)	
	Standby	No pushing force	2.8W（Starting sensors and auxiliary sensors are not included）	
		Under pushing force	5.8W（Starting sensors and auxiliary sensors are not included）	
Motor type			Magnet brushless DC linear motor movable type	
Thrust generation			When three stators are all fully lapped: 40N	
Door weight			20 ~ 50kg／Door	20 ~ 80kg／Door
Door width			＞700mm (If the electric lock equipped：＞800mm)	
※ Self Weight			About 7kg	
Opening speed			0.2~0.5ｍ/sec（set default: 0.4ｍ/sec）	
Closing speed	Automatic type		0.2~0.5ｍ/sec（set default: 0.3ｍ/sec）	
	Assist type		0.2m/sec（fixed）	
Hold open time			1 ~ 10 seconds .When it's set at maximum, it enters into ratchet action status（Set default: 3sec）	

※ Weight may vary depending on rail length.

Section

Controller

hanging round

stopper

Section

Surface mounting type

51.4

above 20

43.5

102

120

5

H

Adjustable
（21～30）

DH

FL ▽

10

Built-in type

51.4

above 20

43.5

102

120

5

H

Adjustable
（21～30）

DH

FL ▽

10

MICOM AUTODOOR

LINEAR ENGINE

MM30

Quiet　Clean　clamp-proof　Assist function　No affect during power outage

Recommended installation areas

Mansion

Apartment

Living room

dining room

Bedroom

Toilet

Living room

Assist function

After moving the door to direction of opening about 2cm, the door will open automatically, and after a certain time it will close automatically.

Highly safe return function

It can return the door immediately to a reverse direction when the door hit the body or obstacles during its opening.

Full open on hold

By pushing the door at its full open status for more than 3 seconds, you will hear a beep and the door will keep at the opening status, and when you want to close then you can pull the door to direction of closing about 2cm, the door will automatically close.
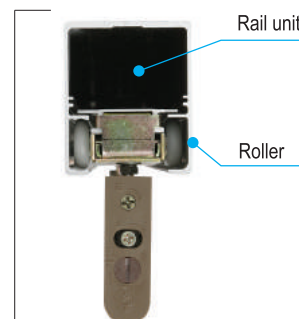
Auxiliary Sensor

Auxiliary sensors is equipped with built-in controller as standard setting. (hot-wire)
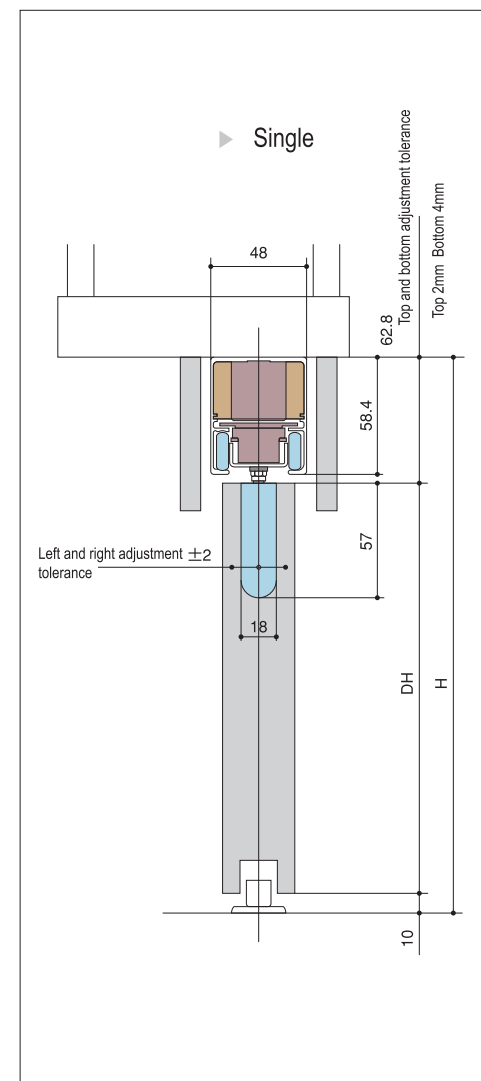
Specifications

Model		MM 30
Required power capacity		AC100V 10% 50/60Hz MAX: 2A
Operating temperature		-10 ~ 40 ℃
Power cons-umption	Average when operating	0.1Wh /Once（Door weight: 30kg / door）
	Standby	2.8W（When the hold open time is set 1 second and excluding sensor consumption.）
Motor type		Magnet brushless DC linear motor movable type
Thrust generation		When three stators are all fully lapped: 13N
Door weight application		15~ 30kg／door
Door width		＞700mm
Self weight※		About 4kg
Opening speed		0.5m/sec
Closing speed		0.2m/sec
Hold open time		1 or 5seconds （switch）

※ Weight may vary depending on rail length.

Section

Rail unit

Roller

Section

▷ Single

48

62.8　Top and bottom adjustment tolerance
Top 2mm Bottom 4mm

58.4

57

18

Left and right adjustment ±2 tolerance

DH

H

10

O P T I O N

Sensor　Switch　Electronic Lock

3

6

1

2

5　4　4
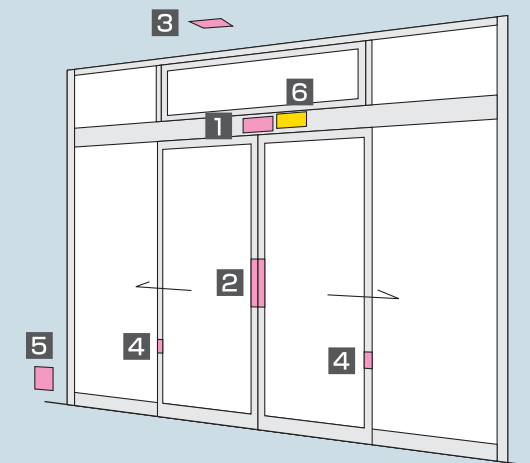
For MM100&MM50

1 Sensors on the top frame of the door	**2** Touch switch
3 Ceiling sensors	**4** Beam switch
5 Foot switch	**6** Electronic lock

* More sensors are available. Please feel free to contact us for more information.

For MM30

Touch switch	Spot sensor