MITSUBISHI ELECTRIC

*Changes for the Better*

Quality in Motion™

# PASSENGER ELEVATORS (MACHINE-ROOM-LESS SYSTEM) Series-IP Version2

**1800kg, 2025kg, 2250kg, 2500kg**

# ELENESSA


Utilizing its technological prowess and extensive experience, we have remained a leader in the vertical transportation market since entering the business in 1931. The Company's creative, innovative spirit, represented by production of the world's first spiral escalator and elevator group-control systems that use artificial-intelligence technologies, continues to receive high evaluations industry-wide. Our products and systems are renowned for their high levels of quality, reliability and safety; and it is this sense of security and trust fostered with building owners and end-users alike that has led to the global expansion of our elevator/escalator business and the after-sales network to service it.

We understand responsibilities as a good corporate citizen, and continue to implement measures for protecting the environment and ensuring a sustainable society for future generations. A number of original technologies are being introduced to ensure more efficient products, systems and manufacturing operations, thereby enhancing productivity, reducing energy consumption and providing smoother, faster and more comfortable vertical transportation systems.

# Principle

Based on our policy, "Quality in Motion", we provide elevators and escalators that will satisfy our customers with high levels of comfort, efficiency, ecology and safety.


Our elevators, escalators and building management systems are always evolving, helping achieve our goal of being the No.1 brand in quality.
In order to satisfy customers in all aspects of comfort, efficiency and safety while realizing a sustainable society, quality must be of the highest level in all products and business activities, while priority is place on consideration for the environment. As the times change, we promise to utilize the collective strengths of its advanced and environmental technologies to offer its customers safe and reliable products while contributing to society.

## We strive to be green in all of our business activities.

We take every action to reduce environmental burden during each process of our elevators' and escalators' lifecycle.



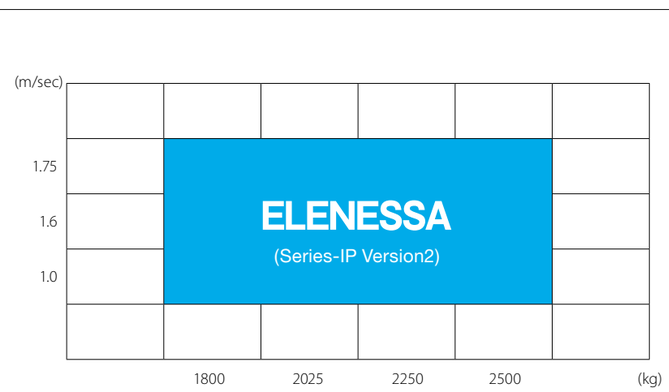

* Quality in Motion is a trademark of Mitsubishi Electric Corporation.



## Contents



### Application

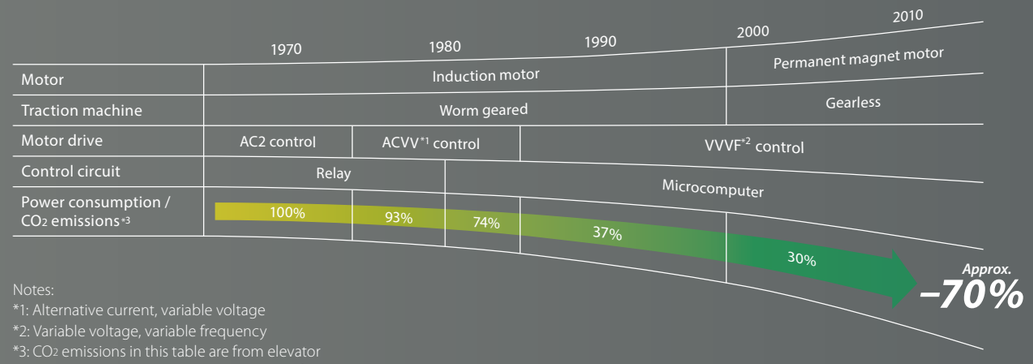



# Green Technology

## Using Energy Wisely

**Our long-term commitment to developing energy-efficient elevators has created systems and functions that make intelligent use of power.**

### Milestones of Energy-saving Technologies in Elevator Development




Notes:
*1: Alternative current, variable voltage
*2: Variable voltage, variable frequency
*3: $CO_2$ emissions in this table are from elevator operation and do not include emissions from manufacturing, transportation and other processes.

## SUSTAINABLE ENERGY USE

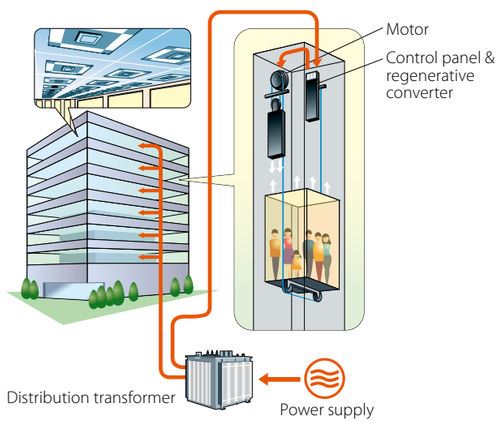
**Our leading-edge technologies have made it possible for elevators to conserve energy. Our regenerative converter makes the most of power generated by the traction machine. Additionally, thanks to the joint-lapped core in permanent magnet (PM) motor and energy-saving features, the elevators use energy more wisely and efficiently.**

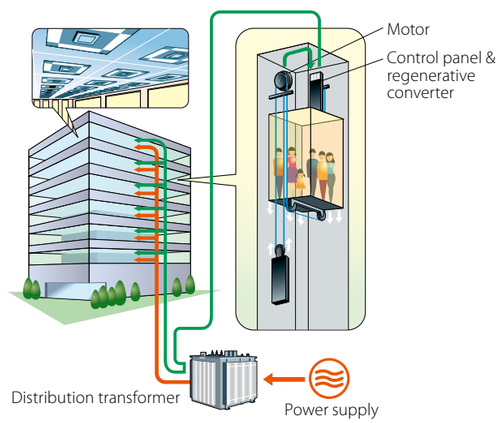
## Regenerative Converter : PCNV (Optional)

**Efficient use of power**

Elevators usually travel using power from a power supply (powered operation); however, when they travel down with a heavy car load or up with a light car load (regenerative operation), the traction machine functions as a power generator. Although the power generated during traction machine operation is usually dissipated as heat, the regenerative converter transmits the power back to the distribution transformer and feeds it into the electrical network in the building along with electricity from the power supply. Compared to the same type of elevator without a regenerative converter, this system provides an energy-saving effect of approximately 35%.* In addition, the regenerative converter has the effect of decreasing harmonic currents.

Note:
* The value is a reference datum and may increase or decrease in accordance with actual conditions of use and elevator specifications.




## Joint-lapped Core in Permanent Magnet (PM) Motor

**Smaller carbon footprint**

The joint-lapped core built into the PM motor of the traction machine features flexible joints. The iron core acts like a hinge, which allows coils to be wound around the core more densely, resulting in improved motor efficiency and compactness. A high-density magnetic field is produced, enabling lower use of energy and resources and reduced $CO_2$ emissions.

## Energy-saving Features

**Curbing energy consumption**

We offer features that help to reduce the energy consumption of elevators.

**Energy-saving Operation**
**– Number of Cars : ESO-N (Optional for ΣAI-22)**

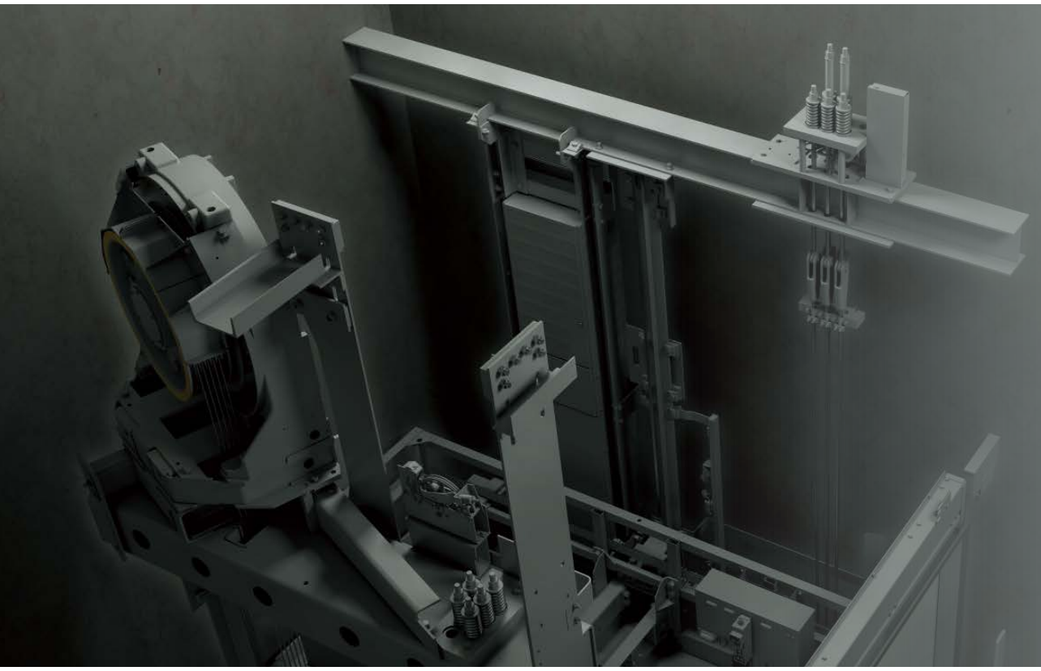
The number of service cars is automatically reduced to some extent without affecting passenger waiting time.

**Energy-saving Operation**
**– Allocation Control : ESO-W (ΣAI-2200C only)**

Based on each elevator's potential energy consumption, the system selects the elevator that best balances operational efficiency and energy consumption.

**Car Light/Fan Shut Off**
**– Automatic : CFO-A/CLO-A**

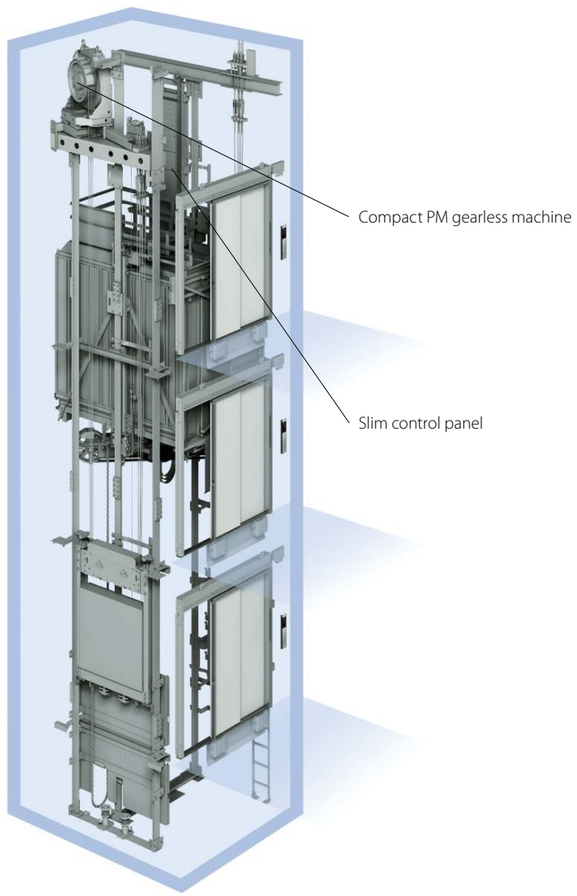
The car lighting/ventilation fan is automatically turned off if there are no calls for a specified period.



# Machine-room-less

## SPACE-SAVING

**As all equipment is installed within the hoistway, there are fewer restrictions on building design except for the actual space required for the shaft. Architects and interior designers have more design freedom.**




## Compact PM Gearless Traction Machine

The gearless traction machine with a PM (permanent magnet) motor is packed with cutting-edge technology, such as our unique stator-core structure and built-in double brakes. This optimized motor design dramatically reduces the level of torque ripple, which positively affects the quality of the ride. So even though the machinery is compact, the ride is smooth, quiet and comfortable.

Furthermore, the PM motor suppresses harmonic noise and torque ripple, providing greater riding comfort.

## Slim Control Panel

More technological advances, such as the high-accumulation LSI (large scale integration) and low-noise PWM (pulse wide modulation) inverter, enable the VVVF (variable voltage, variable frequency) inverter to deliver smooth, high-precision control of the traction machine.

In addition, an IPU (integrated power unit) acts as a high-efficiency power supply circuit for the motor drive and, along with the PM motor, delivers great energy-savings. The result is more efficient, more reliable drive control.

# Group Control

## EFFICIENT TRANSPORTATION

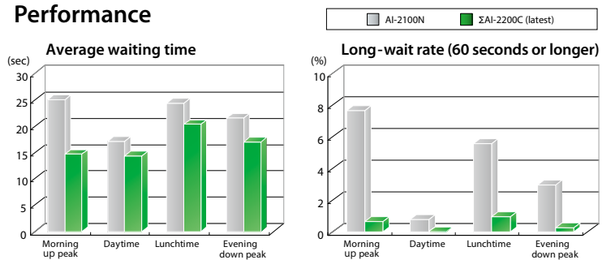
**Our breakthrough AI Neural Network* technology in elevator control enhances transport efficiency and reduces passenger waiting time through optimum car allocation, which allows elevators to use energy effectively. Two basic group control systems offer a variety of innovative group control features.**

Note: *Neural Network is a mathematical model that emulates the structure of the nerves and cells of the human brain and its information processing mechanism.

| Group control systems | Suitable building size | Number of cars in a group |
|---|---|---|
| ΣAI-22 system | Small to medium | 3 to 4 |
| ΣAI-2200C system | Large (Especially, a building with dynamic traffic conditions) | 3 to 8 |

The features introduced on these pages are applicable to ΣAI-2200C only. Please refer to pages 15 and 16, and the ΣAI-2200C brochure for other features and details.

### Performance

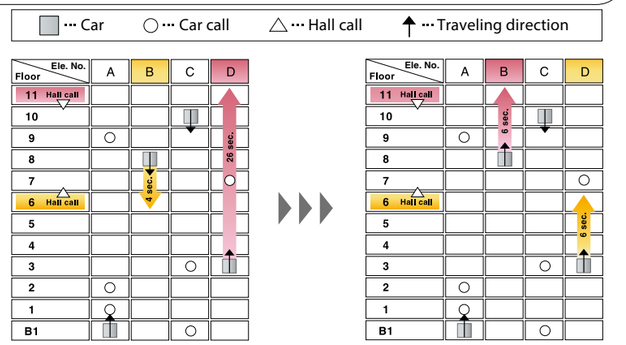



**Improved: Max. 40%** **Improved: Max. 80%**

## Cooperative Optimization Assignment

**Forecasts a near-future hall call to reduce long waits**

When a hall call is registered, the algorithm predicts near-future calls that could require long waits. Through evaluation of the registered hall call and the forecasted call, the best car is assigned. All cars work cooperatively for optimum operation.




**AI-2100N**
[A hall call is registered at 6th Fl.]
Allocates the closest car B.
[Another hall call is soon registered at 11th Fl.]
Allocates D, resulting in long wait of 26 sec.

**ΣAI-2200C (latest)**
[A hall call is registered at 6th Fl.]
Allocates D, which is moving upward.
[Another hall call is soon registered at 11th Fl.]
Allocates B, which immediately arrives at the floor.

## Dynamic Rule-set Optimizer

**Selecting optimum car allocation through rule-set simulations**

Based on real traffic data, passenger traffic is predicted every few minutes. According to the prediction, real-time simulation selects the best rule-set (multiple rules have been set as car allocation patterns), which optimizes transport efficiency.

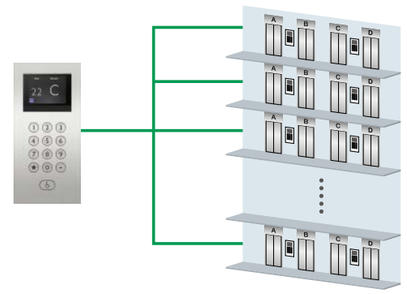
## Destination Oriented Allocation System : DOAS (Optional)

**Allocates passengers to cars depending on destination floors**

When a passenger enters a destination floor at a hall, the hall operating panel immediately indicates which car will serve the floor. Because the destination floor is already registered, the passenger does not need to press a button in the car. Furthermore, dispersing passengers by destination prevents congestion in cars and minimizes waiting and traveling time.

**Standard arrangement of hall fixtures (No hall lantern* is provided.)**
Cars receive destination information from all floors to provide the best service for more complex traffic conditions throughout the day.

**Example of hall arrangement**



Note:
* Hall lanterns are available as optional.

# Standard Design

## Car

Ceiling: S00

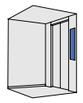
### Car Design Example

| | |
|---|---|
| Walls | SUS-HL |
| Transom panel | SUS-HL |
| Doors | SUS-HL |
| Front return panels | SUS-HL |
| Kickplate | Aluminum |
| Flooring | PR803: Gray |
| Car operating panel | CBV1-C760 |

Ceiling : Painted steel sheet (Y033)
with a milky white resin lighting cover
Lighting: Central lighting

### Car operating panel

For front return panel



Yellow-orange lighting

Tactile button

**CBV1-C760**[*1]
Segment LED indicators[*2]
Tactile buttons with yellow-orange lighting

## Hall

Narrow Jamb: E-102

### Hall Design Example

| | |
|---|---|
| Jamb | SUS-HL |
| Doors | SUS-HL |
| Hall position indicator and button | PIV1-A1010N Boxless |

### Hall position indicators and buttons

With plastic case

**PIV1-A1010N** Boxless

**PIV1-A1020N** Boxless

Segment LED indicators[*2]
Tactile buttons with yellow-orange lighting

Notes:
*1: Maximum number of floors: 22 floors *2: Some letters of the alphabet are not available. Please consult our local agents for details.

Actual colors may differ slightly from those shown.
*Please refer to the design guide for details and other designs.*

# Features (1/2)

| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ EMERGENCY OPERATIONS AND FEATURES** | | | | | |
| Building Management System — GateWay | BMS-GW | Each elevator's status and operation can be monitored and controlled using a building management system which manages various facilities in the building via the interface for the elevator system. | ◎ | ◎ | ◎ |
| Earthquake Emergency Return | EER-P<br>EER-S | Upon activation of primary and/or secondary wave seismic sensors, all cars stop at the nearest floor, and park there with the doors open to facilitate the safe evacuation of passengers. | ◎ | ◎ | ◎ |
| Emergency Car Lighting | ECL | Car lighting which turns on immediately when power fails, providing a minimum level of lighting within the car. (Choice of dry-cell battery or trickle-charge battery.) | ◎ | ◎ | ◎ |
| Fire Emergency Return | FER | Upon activation of a key switch or a building's fire alarm, all calls are canceled, all cars immediately return to a specified evacuation floor and the doors open to facilitate the safe evacuation of passengers. | ◎ | ◎ | ◎ |
| Firefighters' Emergency Operation | FE | During a fire, when the fire operation switch is activated, the car calls of a specified car and all hall calls are canceled and the car immediately returns to a predetermined floor. The car then responds only to car calls which facilitate fire-fighting and rescue operation. | ◎ | ◎ | ◎ |
| MelEye<br>Mitsubishi Elevators & Escalators Monitoring and Control System | WP-W | Each elevator's status and operation can be monitored and controlled using an advanced Web-based technology which provides an interface through personal computers. Special optional features such as preparation of traffic statistics and analysis are also available. | ◎ | ◎ | ◎ |
| Mitsubishi Emergency Landing Device | MELD | Upon power failure, a car equipped with this function automatically moves and stops at the nearest floor using a rechargeable battery, and the doors open to facilitate the safe evacuation of passengers. (Maximum allowable floor-to-floor distance is 10 meters.) | ◎ | ◎ | ◎ |
| Operation by Emergency Power Source — Automatic/Manual | OEPS | Upon power failure, predetermined car(s) uses the building's emergency power supply to move to a specified floor, where the doors then open to facilitate the safe evacuation of passengers. After all cars have arrived, the predetermined car(s) resume normal operation. | ◎ | ◎ | ◎ |
| Supervisory Panel | WP | Each elevator's status and operation can be remotely monitored and controlled through a panel installed in a building's supervisory room, etc. | ◎ | ◎ | ◎ #1 |
| **■ DOOR OPERATION FEATURES** | | | | | |
| Automatic Door-open Time Adjustment | DOT | The time doors are open will automatically be adjusted depending on whether the stop was called from the hall or the car, to allow smooth boarding of passengers or loading of baggage. | — | — | Ⓢ |
| Automatic Door Speed Control | DSAC | Door load on each floor, which can depend on the type of hall doors, is monitored to adjust the door speed, thereby making the door speed consistent throughout all floors. | Ⓢ | Ⓢ | Ⓢ |
| Door Load Detector | DLD | When excessive door load has been detected while opening or closing, the doors immediately reverse. | Ⓢ | Ⓢ | Ⓢ |
| Door Nudging Feature — With Buzzer | NDG | A buzzer sounds and the doors slowly close when they have remained open for longer than the preset period. With the AAN-B or AAN-G feature, a beep and voice guidance sound instead of the buzzer. | Ⓢ | Ⓢ | Ⓢ |
| Door Sensor Self-diagnosis | DODA | Failure of non-contact door sensors is checked automatically, and if a problem is diagnosed, the door-close timing is delayed and the closing speed is reduced to maintain elevator service and ensure passenger safety. | Ⓢ | Ⓢ | Ⓢ |
| Electronic Doorman | EDM | Door open time is minimized using the SR or Multi-beam Door Sensor feature that detects passengers boarding or exiting. | Ⓞ | Ⓞ | Ⓞ |
| Extended Door-open Button | DKO-TB | When the button inside a car is pressed, the doors will remain open longer to allow loading and unloading of baggage, a stretcher, etc. | Ⓞ | Ⓞ | — |
| Hall Motion Sensor | HMS | Infrared-light is used to scan a 3D area near the open doors to detect passengers or objects. | Ⓞ | Ⓞ | Ⓞ |
| Multi-beam Door Sensor | – | Multiple infrared-light beams cover some height of the doors to detect passengers or objects as the doors close. (Cannot be combined with the SR feature.) | Ⓞ | Ⓞ | Ⓞ |
| Reopen with Hall Button | ROHB | Closing doors can be reopened by pressing the hall button corresponding to the traveling direction of the car. | Ⓢ | Ⓢ | Ⓢ |
| Repeated Door-close | RDC | Should an obstacle prevent the doors from closing, the doors will repeatedly open and close until the obstacle is cleared from the doorway. | Ⓢ | Ⓢ | Ⓢ |
| Safety Door Edge | SDE | The sensitive door edge detects passengers or objects during door closing. | Ⓢ | Ⓢ | Ⓢ |
| Safety Ray | SR | One or two infrared-light beams cover the full width of the doors as they close to detect passengers or objects. (Cannot be combined with the Multi-beam Door Sensor feature.) | Ⓞ | Ⓞ | Ⓞ |



| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ OPERATIONAL AND SERVICE FEATURES** | | | | | |
| Attendant Service | AS | Exclusive operation where an elevator can be operated using the buttons and switches located in the car operating panel, allowing smooth boarding of passengers or loading of baggage. | Ⓞ | Ⓞ | Ⓞ |
| Automatic Bypass | ABP | A fully-loaded car bypasses hall calls in order to maintain maximum operational efficiency. | Ⓢ #2 | Ⓢ | Ⓢ |
| Automatic Hall Call Registration | FSAT | If one car cannot carry all waiting passengers because it is full, another car will automatically be assigned for the remaining passengers. | Ⓢ | Ⓢ | Ⓢ |
| Backup Operation for Group Control Microprocessor | GCBK | An operation by car controllers which automatically maintains elevator operation in the event that a microprocessor or transmission line in the group controller has failed. | Ⓢ † | Ⓢ | Ⓢ |
| Car Call Canceling | CCC | When a car has responded to the final car call in one direction, the system regards remaining calls in the other direction as mistakes and clears them from the memory. | Ⓢ | Ⓢ | Ⓢ |
| Car Fan Shut Off — Automatic | CFO-A | If there are no calls for a specified period, the car ventilation fan will automatically turn off to conserve energy. | Ⓢ | Ⓢ | Ⓢ |
| Car Light Shut Off — Automatic | CLO-A | If there are no calls for a specified period,the car lighting will automatically turn off to conserve energy. | Ⓢ | Ⓢ | Ⓢ |
| Continuity of Service | COS | A car which is experiencing trouble is automatically withdrawn from group control operation to maintain overall group performance. | Ⓢ † | Ⓢ | Ⓢ |
| Elevator and Security System Interface | EL-SCA<br>EL-SC | Personal authentication by building's security devices can trigger predetermined elevator operation such as permission of access to private floors, automatic registration of a hall call and a destination floor, and priority service. | Ⓞ #3 | Ⓞ | Ⓞ |
| False Call Canceling — Automatic | FCC-A | If the number of registered car calls does not correspond to the car load, all calls are canceled to avoid unnecessary stops. | Ⓢ | Ⓢ | Ⓢ |
| False Call Canceling — Car Button Type | FCC-P | If a wrong car button is pressed, it can be canceled by quickly pressing the same button again twice. | Ⓢ | Ⓢ | Ⓢ |
| Independent Service | IND | Exclusive operation where a car is withdrawn from group control operation for independent use, such as maintenance or repair, and responds only to car calls. | Ⓢ | Ⓢ | Ⓢ |
| Next Landing | NXL | If the elevator doors do not open fully at a destination floor, the doors close, and the car automatically moves to the next or nearest floor where the doors open. | Ⓢ | Ⓢ | Ⓢ |
| Non-service to Specific Floors — Car Button Type | NS-CB | To enhance security, service to specific floors can be disabled using the car operating panel. This function is automatically deactivated during emergency operation. | Ⓞ | Ⓞ | Ⓞ |
| Non-service to Specific Floors — Switch/Timer Type | NS<br>NS-T | To enhance security, service to specific floors can be disabled using a manual or timer switch. This function is automatically deactivated during emergency operation. | Ⓞ | Ⓞ | Ⓞ |
| Non-service Temporary Release for Car Call — Card Reader Type | NSCR-C | To enhance security, car calls for desired floors can be registered only by placing a card over a card reader. This function is automatically deactivated during emergency operations. | Ⓞ | Ⓞ | Ⓞ |
| Out-of-service by Hall Key Switch | HOS<br>HOS-T | For maintenance or energy-saving measures, a car can be taken out of service temporarily with a key switch (with or without a timer) mounted in a specified hall. | Ⓞ | Ⓞ | Ⓞ |
| Out-of-service-remote | RCS | With a key switch on the supervisory panel, etc., a car can be called to a specified floor after responding to all car calls, and then automatically be taken out of service. | Ⓞ | Ⓞ | Ⓞ |
| Overload Holding Stop | OLH | A buzzer sounds to alert the passengers that the car is overloaded. The doors remain open and the car will not leave that floor until enough passengers exit the car. | Ⓢ | Ⓢ | Ⓢ |
| Regenerative Converter | PCNV | For energy conservation, power regenerated by a traction machine can be used by other electrical systems in the building. | Ⓞ | Ⓞ | Ⓞ |
| Return Operation | RET | Using a key switch on the supervisory panel, a car can be withdrawn from group control operation and called to a specified floor. The car will park on that floor with the doors open, and not accept any calls until independent operations begin. | Ⓞ | Ⓞ | Ⓞ |
| Safe Landing | SFL | If a car has stopped between floors due to some equipment malfunction, the controller checks the cause, and if it is considered safe to move the car, the car will move to the nearest floor at a low speed and the doors will open. | Ⓢ | Ⓢ | Ⓢ |
| Secret Call Service | SCS-B | To enhance security, car calls for desired floors can be registered only by entering secret codes using the car buttons on the car operating panel. This function is automatically deactivated during emergency operation. | Ⓞ | Ⓞ | Ⓞ |

# Features (2/2)

| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ GROUP CONTROL FEATURES** | | | | | |
| Bank-separation Operation | BSO | Hall buttons and the cars called by each button can be divided into several groups for independent group control operation to serve special needs or different floors. | ⓞ†,#1 | ⓞ | ⓞ |
| Car Allocation Tuning | CAT | The number of cars allocated or parked on crowded floors is controlled not just according to the conditions on those crowded floors but also the operational status of each car and the traffic on each floor. | — | — | Ⓢ |
| Car Travel Time Evaluation | – | Cars are allocated to hall calls by considering the number of car calls that will reduce passenger waiting time in each hall and the travel time of each car. | — | Ⓢ | Ⓢ |
| Closest-car Priority Service | CNPS | A function to give priority allocation to the car closest to the floor where a hall call button has been pressed, or to reverse the closing doors of the car closest to the pressed hall call button on that floor. (Cannot be combined with hall position indicators.) | — | ⓞ#1 | ⓞ |
| Congested-floor Service | CFS | The timing of car allocation and the number of cars to be allocated to floors where meeting rooms or ballrooms exist and the traffic intensifies for short periods of time are controlled according to the detected traffic density data for those floors. | — | ⓞ | ⓞ |
| Cooperative Optimization Assignment | – | The system predicts a potential hall call which could cause longer waiting time. Car assignment is performed considering not only current and new calls but also near-future calls. | — | — | Ⓢ |
| Destination Oriented Allocation System | DOAS | When a passenger enters a destination floor at a hall, the hall operating panel indicates which car will serve the floor. The passenger does not need to press a button in the car. Dispersing passengers by destination prevents congestion in the cars and minimizes waiting and traveling time. | — | — | ⓞ#4 |
| Distinction of Traffic Flow with Neural Networks | NN | Traffic flows in a building are constantly monitored using neural network technology, and the optimum operational pattern for the LTS, UPS feature, etc. is selected or canceled accordingly at the appropriate time. | — | — | Ⓢ |
| Down Peak Service | DPS | Controls the number of cars to be allocated and the timing of car allocation in order to meet increased demands for downward travel during office leaving time, hotel check-out time, etc. to minimize passenger waiting time. | — | ⓞ | ⓞ |
| Dynamic Rule-set Optimizer | DRO | Traffic flows in a building are constantly predicted using neural network technology, and an optimum rule-set for group control operations is selected through real-time simulations based on prediction results. | — | — | Ⓢ |
| Elevator Call System with Smartphone | ELCS-SP | Users can call an elevator remotely by accessing a dedicated website with a smartphone. By eliminating the need to touch a call button in the elevator lobby or car, the system provides increased convenience and comfort to users. | ⓞ#1 | ⓞ#1 | ⓞ#1 |
| Energy-saving Operation — Allocation Control | ESO-W | The system selects the elevator that best balances operational efficiency and energy consumption according to each elevator's current location and passenger load as well as predicted congestion levels throughout the day. | — | — | Ⓢ |
| Energy-saving Operation — Number of Cars | ESO-N | To save energy, the number of service cars is automatically reduced to some extent, but not so much that it adversely affects passenger waiting time. | — | ⓞ | Ⓢ |
| Expert System and Fuzzy Logic | – | Artificial expert knowledge, which has been programmed using "expert system" and "fuzzy logic", is applied to select the ideal operational rule which maximizes the efficiency of group control operations. | — | Ⓢ | Ⓢ |
| Forced Floor Stop | FFS | All cars in a bank automatically make a stop at a predetermined floor on every trip without being called. | ⓞ | ⓞ | ⓞ |
| Light-load Car Priority Service | UCPS | When traffic is light, empty or lightly-loaded cars are given higher priority to respond to hall calls in order to minimize passenger travel time. (Cannot be combined with hall position indicators.) | — | ⓞ#1 | ⓞ |
| Lunchtime Service | LTS | During the first half of lunchtime, calls for a restaurant floor are served with higher priority, and during the latter half, the number of cars allocated to the restaurant floor, the allocation timing for each car and the door opening and closing timing are all controlled based on predicted data. | — | ⓞ | ⓞ |
| Main Floor Changeover Operation | TFS | This feature is effective for buildings with two main (lobby) floors. The floor designated as the "main floor" in a group control operation can be changed as necessary using a manual switch. | ⓞ | ⓞ | ⓞ |
| Main Floor Parking | MFP | An available car always parks on the main (lobby) floor with the doors open (or closed only in China). | ⓞ | ⓞ | ⓞ |
| Peak Traffic Control | PTC | A floor which temporarily has the heaviest traffic is served with higher priority over other floors, but not to the extent that it interferes with the service to other floors. | — | Ⓢ | Ⓢ |
| Psychological Waiting Time Evaluation | – | Cars are allocated according to the predicted psychological waiting time for each hall call. The rules evaluating psychological waiting time are automatically changed in a timely manner in response to actual service conditions. | — | Ⓢ | Ⓢ |
| Special Car Priority Service | SCPS | Special cars, such as observation elevators and elevators with basement service, are given higher priority to respond to hall calls. (Cannot be combined with hall position indicators.) | — | ⓞ#1 | ⓞ |
| Special Floor Priority Service | SFPS | Special floors, such as floors with VIP rooms or executive rooms, are given higher priority for car allocation when a call is made on those floors. (Cannot be combined with hall position indicators.) | — | ⓞ#1 | ⓞ |
| **■ GROUP CONTROL FEATURES** | | | | | |
| Strategic Overall Spotting | SOHS | To reduce passenger waiting time, cars which have finished service are automatically directed to positions where they can respond to predicted hall calls as quickly as possible. | Ⓢ† | Ⓢ | Ⓢ |
| Up Peak Service | UPS | Controls the number of cars to be allocated to the lobby floor, as well as the car allocation timing, in order to meet increased demands for upward travel from the lobby floor during office starting time, hotel check-in time, etc., and minimize passenger waiting time. | — | ⓞ | ⓞ |
| VIP Operation | VIP-S | A specified car is withdrawn from group control operation for VIP service operation. When activated, the car responds only to existing car calls, moves to a specified floor and parks there with the doors open. The car then responds only to car calls. | ⓞ†,#1 | ⓞ | ⓞ |
| **■ SIGNAL AND DISPLAY FEATURES** | | | | | |
| Auxiliary Car Operating Panel | ACS | An additional car control panel which can be installed for large-capacity elevators, heavy-traffic elevators etc. | ⓞ | ⓞ | ⓞ |
| Basic Announcement | AAN-B | A synthetic voice (and/or buzzer) alerts passengers inside a car that elevator operation has been temporarily interrupted by overloading or a similar cause. (Available in limited languages.) | Ⓢ | Ⓢ | Ⓢ |
| Car Arrival Chime | AECC (car) | Electronic chimes sound to indicate that a car will soon arrive. (The chimes are mounted either on the top and bottom of the car, or in each hall.) | ⓞ | ⓞ | — |
| | AECH (hall) | | ⓞ | ⓞ | Ⓢ |
| Car Information Display | CID | This 10.4- or 15-inch LCD for car front return panels shows the date and time, car position, travel direction and elevator status messages.<br>* Please consult our local agents if you would like to display a video or a slideshow of still images on the screen. | ⓞ#1 | ⓞ#1 | ⓞ#1 |
| Car LCD Position Indicator | CID-S | This 5.7-inch LCD for car operating panels shows the date and time, car position, travel direction and elevator status messages. | ⓞ | ⓞ | ⓞ |
| Flashing Hall Lantern | FHL | A hall lantern, which corresponds to a car's service direction, flashes to indicate that the car will soon arrive. | ⓞ | ⓞ | Ⓢ |
| Hall Information Display | HID | This 10.4- or 15-inch LCD for elevator halls shows the date and time, car position, travel direction and elevator status messages.<br>* Please consult our local agents if you would like to display a video or a slideshow of still images on the screen. | ⓞ#1 | ⓞ#1 | — |
| Hall LCD Position Indicator | HID-S | This 5.7-inch LCD for elevator halls shows the date and time, car position, travel direction and elevator status messages. | ⓞ#1 | ⓞ#1 | — |
| Immediate Prediction Indication | AIL | When a passenger has registered a hall call, the best car to respond to that call is immediately selected, the corresponding hall lantern lights up and a chime sounds once to indicate which doors will open. | — | ⓞ | ⓞ |
| Intercommunication System | ITP | A system which allows communication between passengers inside a car and the building personnel. | ⓞ | ⓞ | ⓞ |
| Second Car Prediction | TCP | When a hall is crowded to the extent that one car cannot accommodate all waiting passengers, the hall lantern of the next car to serve the hall will light up. | — | — | ⓞ |
| Sonic Car Button — Click Type | ACB | A click-type car button which emits electronic beep sounds when pressed to indicate that the call has been registered. | ⓞ | ⓞ | ⓞ |
| Voice Guidance System | AAN-G | Information on elevator service such as the current floor or service direction is given to the passengers inside a car. | ⓞ | ⓞ | ⓞ |

Notes: 1C-2BC (1-car selective collective) - Standard, 2C-2BC (2-car group control) - Optional
ΣAI-22 (3-to 4-car group control system) - Optional, ΣAI-2200C (3-to 8-car group control system) - Optional
Ⓢ= Standard ⓞ= Optional †= Not applicable to 1C-2BC —= Not applicable
#1: Please consult our local agents for the production terms, etc.
#2: Optional when the operation system is 1C-2BC.
#3: When 2C-2BC, please consult our local agents.
#4: • When the DOAS is applied, AECC is Ⓢ and the Safety Ray (SR) or Multi-beam Door Sensor feature should be installed.
• The DOAS cannot be combined with some features. Please refer to the ΣAI-2200C brochure for those features.

# Basic Specifications and Important Information on Elevator Planning

## Horizontal Dimensions <1-Door 1-Gate>

| Code number | Number of persons | Rated capacity (kg) | Door type | Entrance width (mm) JJ | Counter-weight position | Car internal dimensions(mm) AA x BB | Minimum hoistway dimensions (mm) AHxBH/car |
|---|---|---|---|---|---|---|---|
| P24 | 24 | 1800 | CO | 1200 | Rear | 2350×1600 | 2900×2290 |
| P27 | 27 | 2025 | CO | 1200 | Rear | 2350×1700 | 2900×2390 |
| | | | | 1100 | Side | 1500×2700 | 2570×3080 |
| | | | 2S | 1300 | | | 2520×3150 |
| P30 | 30 | 2250 | CO | 1200 | Rear | 2350×1900 | 2900×2590 |
| P33 | 33 | 2500 | CO | 1100 | Side | 1800×2700 | 2820×3080 |
| | | | 2S | 1300 | | | 2820×3150 |

## <1-Door 2-Gate>

| Code number | Number of persons | Rated capacity (kg) | Door type | Entrance width (mm) JJ | Counter-weight position | Car internal dimensions(mm) AA x BB | Minimum hoistway dimensions (mm) AHxBH/car |
|---|---|---|---|---|---|---|---|
| P27 | 27 | 2025 | CO | 1100 | Side | 1500×2600 | 2570×3154 |
| | | | 2S | 1300 | | | 2520×3298 |
| P33 | 33 | 2500 | CO | 1100 | | 1800×2600 | 2820×3154 |
| | | | 2S | 1300 | | | 2820×3298 |

[ Terms of the table ]
- This table shows standard specifications without the fireproof landing door and counterweight safety. Please consult our local agents for other specifications.
- CO: 2-panel center opening doors, 2S: 2-panel side sliding doors.
- Minimum hoistway dimensions (AH and BH) shown in the table are after waterproofing of the pit and do not include plumb tolerance.

## Vertical Dimensions <1-Door 1-Gate & 1-Door 2-Gate>

| Rated speed (m/sec) | Rated capacity (kg) | Maximum travel (m) | Maximum number of floors | Minimum overhead (mm) OH | | Minimum pit depth (mm) PD | Minimum floor to floor height (mm) |
|---|---|---|---|---|---|---|---|
| | | | | 1D1G | 1D2G | | |
| 1.0 | 1800 | 60 | 24 | 4220 | — | 1630 | 2500 |
| | ~2025 | | | | 4450 | | |
| | ~2250 | | | | — | | |
| | ~2500 | | | | 4450 | 1730 | |
| 1.6 | 1800 | | | 4380 | — | 1730 | |
| | ~2025 | | | | 4610 | | |
| | ~2250 | | | | — | | |
| | ~2500 | | | | 4610 | | |
| 1.75 | 1800 | | | 4440 | — | 1770 | |
| | ~2025 | | | | 4670 | | |
| | ~2250 | | | | — | | |
| | ~2500 | | | | 4670 | | |

[ Terms of the table ]
- This table shows standard specifications without counterweight safety. Please consult our local agents for other specifications.
- Minimum overhead (OH) and minimum pit depth (PD) should be increased when the travel is over 30m.
- Some specifications require more than 2500mm as a minimum floor height. Please consult our local agents if the floor height is less than entrance height HH + 700mm, and the elevator is 1-Door 2-Gate.

## Work Not Included in Elevator Contract

The following items are excluded from our elevator installation work. Their conditions and other details are to be conformed to the statement of local laws or our requirements on the responsibility of the building owner or general contractor.

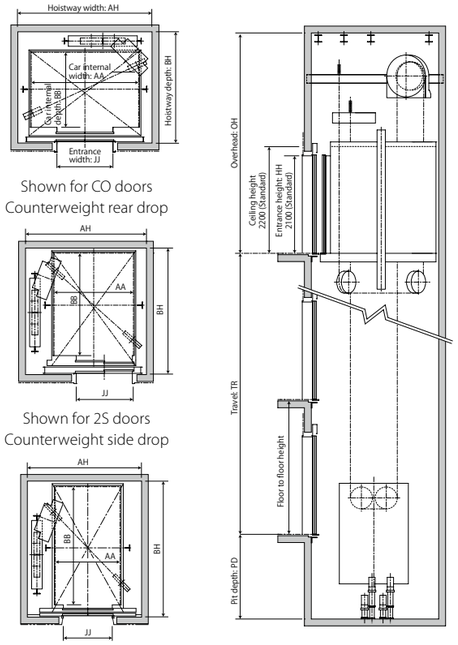
- Architectural finishing of walls and floors in the vicinity of the entrance hall after installation has been completed.
- Construction of an illuminated, ventilated and waterproofed hoistway.
- The provision of a ladder to the elevator pit.
- The provision of openings and supporting members as required for equipment installation.
- The provision of separate beams when the hoistway dimensions markedly exceed the specifications, and intermediate beams and separator partitions when two or more elevators are installed.
- The provision of an emergency exit door, inspection door and pit access door, when required, and access to the doors.
- All other work related to building construction.
- The provision of the main power and power for illumination in the hoistway by laying of the feeder wiring from the electrical switch boxes in electrical room into the hoistway.
- The provision of outlets and laying of the wiring in the hoistway, plus the power from the electrical switch box.
- The laying of conduits and wiring between the elevator pit and the terminating point for the devices installed outside the hoistway, such as the emergency bell, intercom, monitoring and security devices.
- The power consumed in installation work and test operations.
- All the necessary building materials for grouting in of brackets, bolts, etc.
- The test provision and subsequent alteration as required, and eventual removal of the scaffolding as required by the elevator contractor, and any other protection of the work as may be required during the process.
- The provision of a suitable, locked space for the storage of elevator equipment and tools during elevator installation.
- The security system, such as a card reader, connected to our elevator controller, when supplied by the building owner or general contractor.

Note: Work responsibilities in installation and construction shall be determined according to local laws.



## <1-Door 1-Gate>

**Hoistway Plan** **Elevation**




Shown for CO doors
Counterweight rear drop




Shown for 2S doors
Counterweight side drop

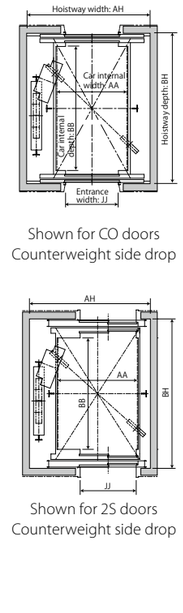



Shown for CO doors
Counterweight side drop

Note:
- The layout (position of traction machine, etc.) differs depending on capacity.
- Elevation for counterweight rear drop is slightly different from this figure.

## <1-Door 2-Gate>

**Hoistway Plan** **Elevation**




Shown for CO doors
Counterweight side drop




Shown for 2S doors
Counterweight side drop

Note: The layout (position of traction machine, etc.) differs depending on capacity.

**Basic code compliance**

The dimensional information shown here in this page is based on the requirements of EN81-1. For other components, please consult our local agent.

## Elevator Site Requirements

- The temperature of the elevator hoistway shall be below 40˚C.
- The following conditions are required for maintaining elevator performance.
  a. The relative humidity shall be below 90% on a monthly average and below 95% on a daily average.
  b. Prevention shall be provided against icing and condensation occurring due to a rapid drop in the temperature in the elevator hoistway.
  c. The elevator hoistway shall be finished with mortar or other materials so as to prevent concrete dust.
- Voltage fluctuation shall be within a range of +5% to -10%.

## Ordering Information

Please include the following information when ordering or requesting estimates:

- The desired number of units, speed and loading capacity.
- The number of stops or number of floors to be served.
- The total elevator travel and each floor-to-floor height.
- Operation system.
- Selected design and size of car.
- Entrance design.
- Signal equipment.
- A sketch of the part of the building where the elevators are to be installed.
- The voltage, number of phases, and frequency of the power source for the motor and lighting.

## State-of-the-Art Factories…
## For the Environment. For Product Quality.

Our elevators and escalators are currently operating in approximately 90 countries around the globe. Built placing priority on safety, our elevators, escalators and building system products are renowned for their excellent efficiency, energy savings and comfort.
The technologies and skills cultivated at the Inazawa Building Systems Works in Japan and 12 global manufacturing factories are utilized in a worldwide network that provides sales, installation and maintenance in support of maintaining and improving product quality.
As a means of contributing to the realization of a sustainable society, we consciously consider the environment in business operations, proactively work to realize a low-carbon, recycling-based society, and promote the preservation of biodiversity.

### ISO9001/14001 certification

> Mitsubishi Electric Building Solutions Corporation Inazawa Building Systems Works has acquired ISO 9001 certification from the International Organization for Standardization based on a review of quality management. The plant has also acquired environmental management system standard ISO 14001 certification.

ISO 9001
BUREAU VERITAS
Certification

ISO 14001
JACO
EC98J2017
UKAS MANAGEMENT SYSTEMS
0051

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⚠ **Safety Tips:** Be sure to read the instruction manual fully before using this product.

MS

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