MITSUBISHI ELECTRIC

*Changes for the Better*

for a greener tomorrow eco Changes

Quality in Motion™

# PASSENGER ELEVATORS (HIGH-SPEED CUSTOM-TYPE)

# NexWay


Utilizing its technological prowess and extensive experience, Mitsubishi Electric has 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.

# Premium Elevators Custom-designed to Match Your Needs

Mitsubishi Electric high-speed elevators are designed to keep pace with the vertical growth of cities as buildings soar to ever greater heights. Our premium elevators guarantee high levels of passenger safety and comfort, and can be customized for diverse applications including office buildings, hotels and shopping centers. We can tailor specifications to meet your exact needs and add a distinctive touch that sets your building apart from the rest.

# 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.


Mitsubishi Electric 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, Mitsubishi Electric promises 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.

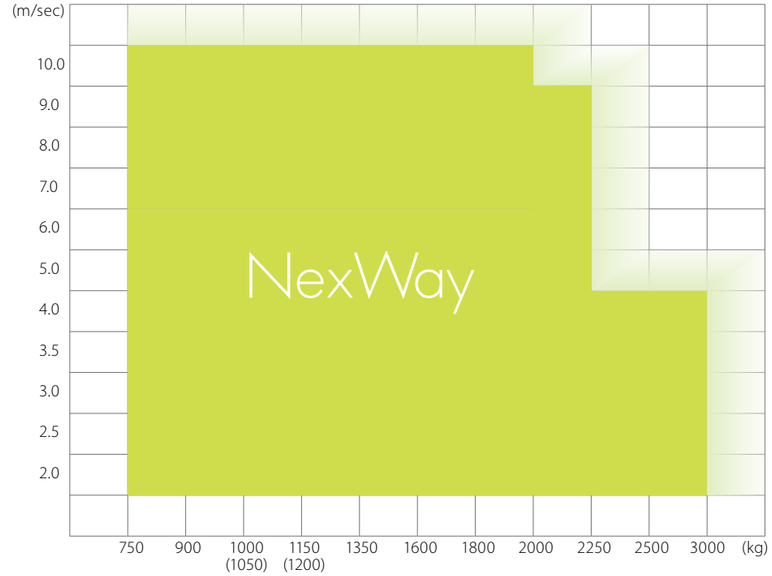





# Contents



## Application



# Speed

## Traction Machine with PM Motor

(PM motor: permanent magnet motor)

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.

## Super High-rise Rope Mechanics

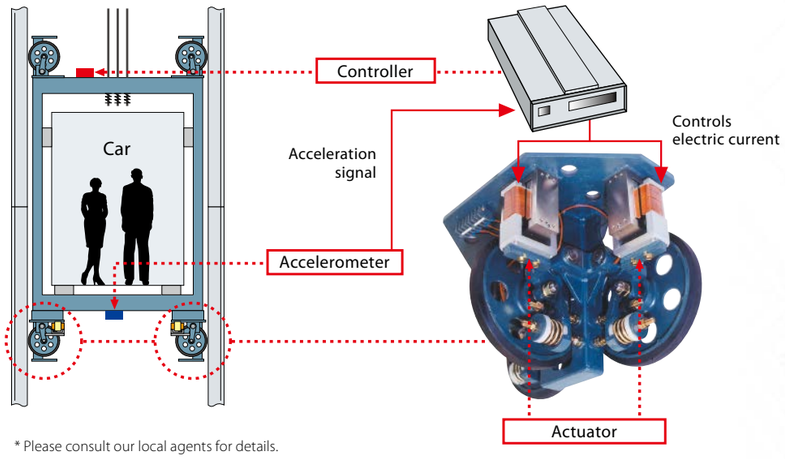
Mitsubishi Electric's new sfleX-rope® comprising bundles of high-intensity steel wire strands, each covered with plastic, offers higher intensity than conventional rope for safe operation despite the greater weight of longer ropes. Each wire has a higher density and wider cross-sectional area than conventional rope, which helps to reduce rope stretching caused when passengers step into the elevator.

Application of the sfleX-rope® depends on travel, speed, etc. Please consult our local agents for details.
The sfleX-rope® is a registered trademark of Mitsubishi Electric Corporation.

# Comfort

## Active Roller Guide (Optional*)

The amount of lateral vibration generated by high-speed elevator cars is tremendous.  As a world's first innovation in the industry, Mitsubishi Electric's Active Roller Guide technology reduces this vibration by approximately 50%. It works via an accelerometer that detects car vibration during operation, along with actuators that cancel the vibration through a controlled electromagnetic force.  Mitsubishi Electric Active Roller Guides ensure a more comfortable ride than elevators employing conventional roller guides.



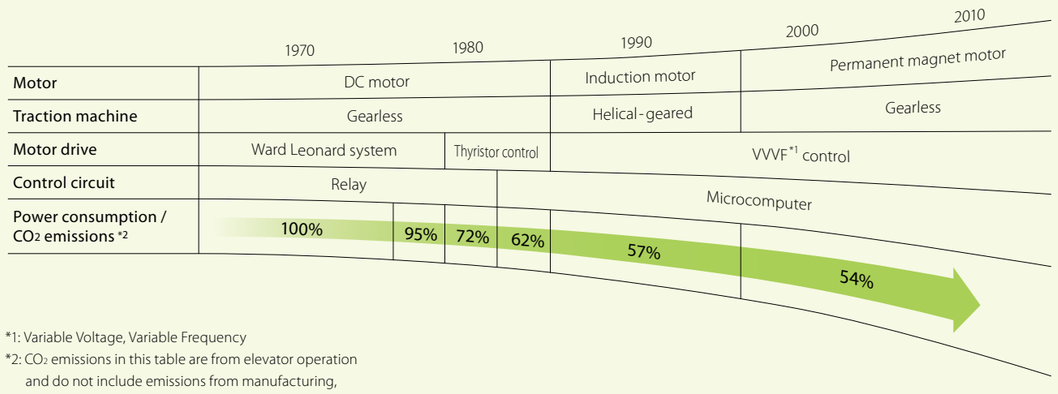

* Please consult our local agents for details.

# Ecology

## 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




*1: Variable Voltage, Variable Frequency
*2: $CO_2$ emissions in this table are from elevator operation and do not include emissions from manufacturing, transportation and other processes.

## Devices that Use Less Energy

### LED Lighting (Optional)

Used for ceiling lights and hall lanterns, LEDs boost the overall energy performance of the building. Furthermore, a long service life eliminates the need for frequent lamp replacement.

**Ceiling: L210S** LED downlights (yellow-orange)

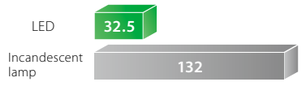
**Advantages of LEDs**

**Ceiling: L210S**

**Service life (hr)**


**Approximately 12.5 times longer**

**Power consumption (W)**




**Approximately 75% reduction**

## Maximizing Operational Efficiency and Minimizing Energy Consumption

### Energy-saving Operation—Allocation Control: ESO-W (ΣAI-2200C only)

This system selects the elevator in a group that best balances operational efficiency and energy consumption. Priority is given to operational efficiency during peak hours and energy efficiency during non-peak hours.

Through a maximum 10% reduction in energy consumption compared to our conventional system, this system allows building owners to cut energy costs without sacrificing passenger convenience.



# Safety

## Emergency Situations

### Emergency Operations

Enhance safety by adding emergency operation features which quickly respond to a power failure, fire or earthquake. (Please refer to page 33 for details.)

| | |
|---|---|
| **Power failure** | **Mitsubishi Emergency Landing Device: MELD (Optional)**<br>Upon power failure, the car automatically moves to the nearest floor using a rechargeable battery to facilitate the safe evacuation of passengers. |
| | **Operation by Emergency Power Source — Automatic/Manual: OEPS (Optional)**<br>Upon power failure, predetermined cars use the building's emergency power supply to move to a specified floor and open the doors for passengers to evacuate. After all cars have arrived, the predetermined cars will resume normal operation. |
| **Fire** | **Fire Emergency Return: FER (Optional)**<br>When a key switch or the building's fire sensor is activated, all cars immediately return to a specified floor and open the doors to facilitate the safe evacuation of passengers. |
| | **Firefighters' Emergency Operation: FE (Optional)**<br>When the fire operation switch is activated, the car immediately returns to a predetermined floor. The car then responds only to car calls, which facilitates firefighting and rescue operations. |
| **Earthquake** | **Earthquake Emergency Return: EER-P/EER-S (Optional)**<br>When a primary and/or secondary wave seismic sensor is activated, all cars stop at the nearest floor and park there with the doors open to facilitate the safe evacuation of passengers. |

## For Safe Boarding

### Door Safety Devices

Our reliable safety devices ensure that the doors are clear to open and close. Depending on the type of sensor, the detection area differs.

**Hall Motion Sensor: HMS (Optional)**

**Multi-beam Door Sensor (Optional)**

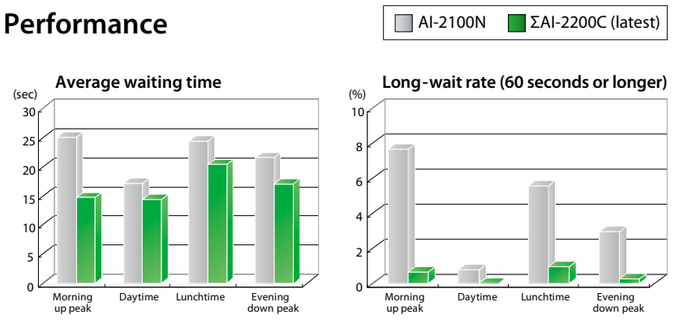

# Efficiency

## Group Control Systems: ΣAI-22 and ΣAI-2200C

ΣAI-22 and ΣAI-2200C control multiple elevators optimally according to the building size.

| 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 buildings with dynamic traffic conditions) | 3 to 8 |

### Performance

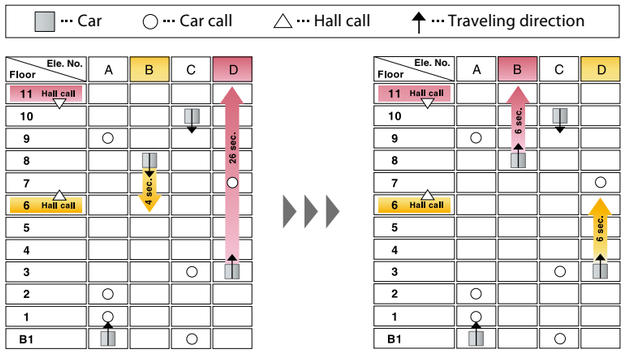



**Improved: Max. 40%** **Improved: Max. 80%**

## Cooperative Optimization Assignment (ΣAI-2200C)

### 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.

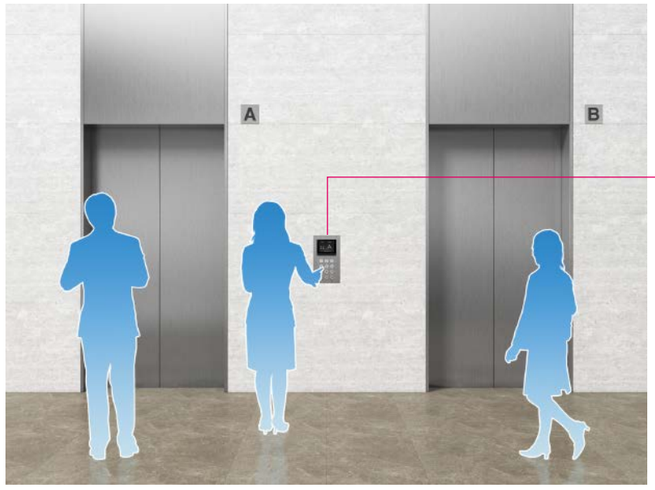
**ΣAI-2200C (latest)**
[A hall call is registered at 6th Fl.]
Allocates D, which is moving upward.
[Another hall call is soon registered at 11th Fl.]
Allocates B, which immediately arrives at the floor.

## Destination Oriented Allocation System: DOAS (Optional for ΣAI-2200C)

### Allocating 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. (Car destination floor indicator can be installed on the car operating panel as an option to display which floors the car stops at.)

### Example of hall arrangement




(The elevator number plates are to be supplied by customer, and hall lanterns are available as options.)


**Hall operating panel**
When a passenger enters a destination floor number, the elevator number assigned to the destination is displayed.

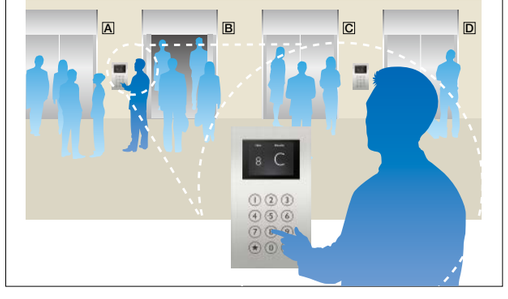
### Advantages of DOAS at Hall

**Without DOAS**

Passengers wait for cars wondering which car will arrive first. Once a car arrives, regardless of the destination, passengers rush to get into the car.

**With DOAS**

When passengers enter a destination floor at a hall, the hall operating panel indicates which elevator to take. As passengers proceed to the assigned elevator, the car is on its way and there is no hurry when the car arrives.






Please refer to the ΣAI-2200C brochure for details.


# Displays

### LCD Information Display* (10.4- or 15-inch)

The cutting-edge LCD display delivers elevator information with stereoscopic direction arrows and animated pictures, and entertains the passengers with DVD playback/television (NTSC/PAL).


Example display of partial-screen animated picture

Car

Hall

## Colors

Select the best color from our five popular and eye-catching background colors.


Urban Black


Stylish Blue

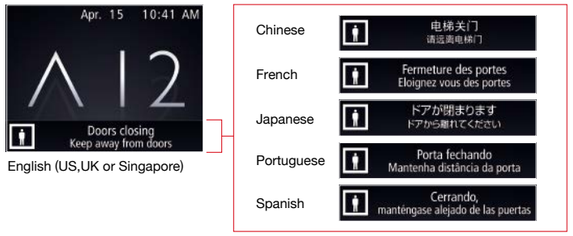

Fine Green


Modern White


Elegance Brown

## Language

Standard elevator information, and date and time are available in English (US, UK or Singapore), Chinese, French, Japanese, Portuguese or Spanish.




English (US,UK or Singapore)

Note:
* Please consult our local agents for the production terms, etc.



Please refer to the Information Display brochure for details.

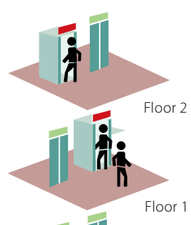
# IT Solutions

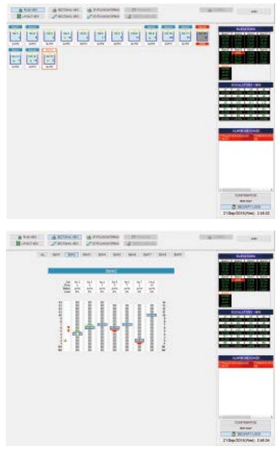
## Elevator Monitoring and Control System: MelEye (Optional)

**Mel Eye** closely observes the operational status of elevators that handle continually changing passenger traffic. This allows building managers to rapidly respond to changing traffic patterns, thus optimizing the performance of elevators and maximizing the added value of the whole building. The application of the latest network technology has also greatly increased the number of controllable elevators, which minimizes the cost spent on facilities such as supervisory rooms and monitors.
**Mel Eye** is our solution to futuristic building traffic monitoring systems.

### ▸ Monitoring screens

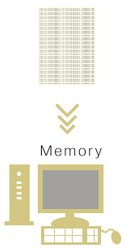
MelEye's user-friendly screen shows the detailed operational status of the elevators in real time.

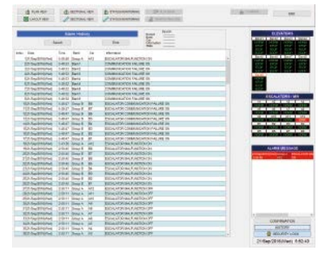


### ▸ Statistical information

The past fault logs of the elevators and escalators are recorded in addition to the operation logs of the computer.



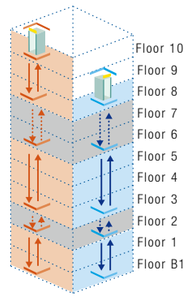



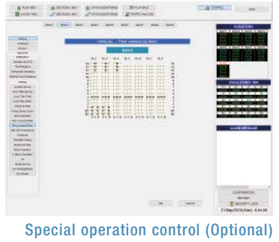
Recording of logs

### ▸ Remote control

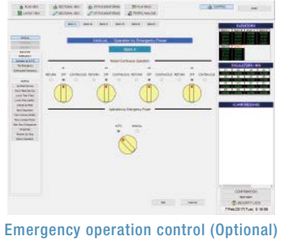
A computer allows remote control of special and emergency operations.

**Floor lockout**



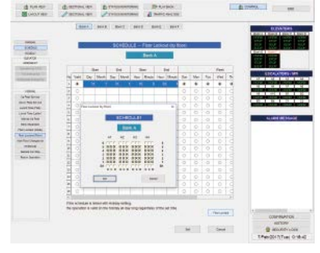



Special operation control (Optional)



Emergency operation control (Optional)

### ▸ Scheduling of special operations



Scheduling of special operations (Optional)

Please refer to the MelEye brochure for details.

## Customized-1

**Distinctive design using vaulted lighting and marble floor finish**



### Car Design Example

| | |
|---|---|
| Ceiling (Customized-1) | Panel: Painted steel sheet [Y033: White]<br>Lighting: Central indirect lighting and downlights |
| Walls | Colored (bronze) SUS-HE |
| Transom panel | SUS-M |
| Doors | Colored (bronze) SUS-HE |
| Front return panels | SUS-M |
| Kickplate | SUS-HL |
| Flooring | Marble (supplied by customer) |
| Car operating panel | CBV3-D750 (faceplate: SUS-M) |
| Handrails | YH-59M |
| Mirrors | YZ-55SN |

## Customized-2

**Indirect center lighting and downlights create a relaxing atmosphere**

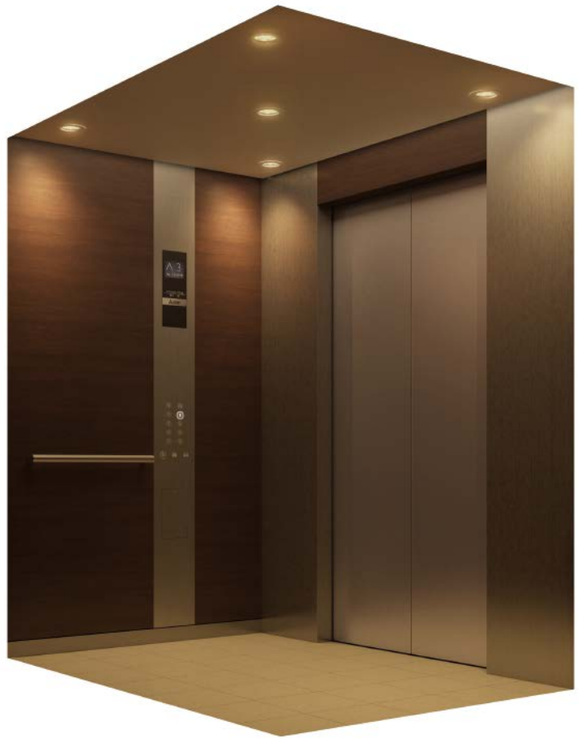
### Car Design Example

| | |
|---|---|
| Ceiling (Customized-2) | Panel: Painted steel sheet [Y033: White]<br>Lighting: Central indirect lighting and downlights |
| Walls | Painted steel sheet |
| Transom panel | Painted steel sheet |
| Doors | Painted steel sheet |
| Front return panels | SUS-HL |
| Kickplate | SUS-HL |
| Flooring | Marble (supplied by customer) |
| Car operating panel | CBN4-C710 |
| Handrails | YH-59M |
| Mirror | YZ-52A |

Actual colors may differ slightly from those shown.
Please refer to page 20 for the explanations of SUS-HL, colored SUS-HE and SUS-M.

## L210 | Sophisticated atmosphere created by downlights and shadows

LED



### Car Design Example

| | |
|---|---|
| Ceiling (L210) | Panel: Painted steel sheet [Y033: White]<br>Lighting: Downlights (LEDs) |
| Walls | Pattern-printed steel sheet [CP111: Dark grain] |
| Transom panel | Pattern-printed steel sheet [CP111: Dark grain] |
| Doors | Pattern-printed steel sheet [CP101: Silver] |
| Front return panels | SUS-HL |
| Kickplate | SUS-HL |
| Flooring | Durable vinyl tiles |
| Car operating panel | CBV3-N730 |
| Handrails | YH-59S |

Optional Ceiling Design **L210S**
Panel: SUS-HL
Others: Same as L210.

## N300 | Terraced design with illusion of increased ceiling height

### Car Design Example

| | |
|---|---|
| Ceiling (N300) | Panel: Painted steel sheet [Y033: White]<br>Lighting: Central indirect lighting and downlights |
| Walls | Colored (gold) SUS-HL |
| Transom panel | Colored (gold) SUS-HL |
| Doors | SUS-M |
| Front return panels | SUS-M |
| Kickplate | Colored (gold) SUS-HL |
| Flooring | Rubber tile<br>(supplied by customer) |
| Car operating panel | CBV1-C730 (faceplate: SUS-M) |
| Handrails | YH-59M |

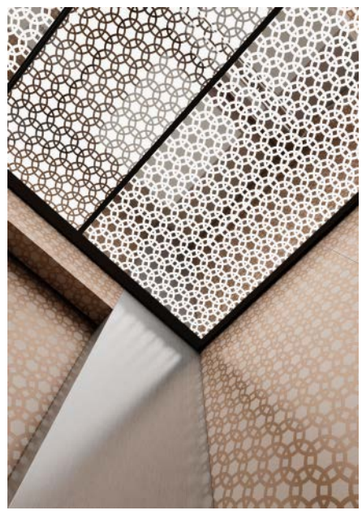
Optional Ceiling Design **N300S**
Panel: SUS-HL
Others: Same as N300.

Actual colors may differ slightly from those shown.
Please refer to page 20 for the explanations of SUS-HL, colored SUS-HE and SUS-M.

## N130 Light transmitted through exotic ceiling patterns

### Car Design Example

| | |
|---|---|
| Ceiling (N130) | Panel: Milky white resin panels<br>Lighting: Full lighting |
| Walls | Colored (bronze) SUS-HE (EPA-2) |
| Transom panel | Colored (bronze) SUS-HE (EPA-2) |
| Doors | Colored (bronze) SUS-HE (EPA-2) |
| Front return panels | SUS-HL |
| Kickplate | Colored (bronze) SUS-HL |
| Flooring | Rubber tile (supplied by customer) |
| Car operating panel | CBV1-N710 (faceplate: SUS-M) |
| Handrails | YH-59M |
| Mirror | YZ-53A |



## N120 Gorgeous ceiling with lustrous translucent panels fused using refined geometric patterns

### Car Design Example

| | |
|---|---|
| Ceiling (N120) | Panels: [Center] Milky white resin panel<br>[Sides] Resin panels with mirrored surface<br>Lighting: Central lighting and downlights |
| Walls | SUS-HE (EPA-3) |
| Transom panel | SUS-HE (EPA-3) |
| Doors | SUS-HE (EPA-3) |
| Front return panels | SUS-M |
| Kickplate | SUS-HL |
| Flooring | Rubber tile (supplied by customer) |
| Car operating panel | CBV5-N710 |
| Handrails | YH-59M |

## Car Finish Application Table

Please refer to pages 31 and 32 for materials and colors.

| Materials / Finishes | Walls | Transom panel | Doors | Front return panels | Kickplate | Flooring | Sill |
|---|---|---|---|---|---|---|---|
| Stainless-steel, hairline-finish (SUS-HL) | Standard | Standard | Standard | Standard | Optional | | |
| Pattern-printed steel sheet | Optional | Optional | Optional | | | | |
| Painted steel sheet | Optional | Optional | Optional | Optional | Optional*3 | | |
| Stainless-steel, hairline-finish with etched pattern*1 (SUS-HE) | Optional | Optional | Optional | | | | |
| Colored stainless-steel, hairline-finish (colored SUS-HL) | Optional | Optional | Optional | | Optional | | |
| Colored stainless-steel, hairline-finish with etched pattern*2 (colored SUS-HE) | Optional | Optional | Optional | | | | |
| Stainless-steel, mirror-finish (SUS-M) | Optional | Optional | Optional | Optional | | | |
| Aluminum | | | | | Standard | | |
| Glass windows [1300(H)×200(W)/1300(H)×300(W)] | | | Optional | | | | |
| See-through doors | | | Optional | | | | |
| Durable vinyl tiles (2mm thick) | | | | | | Standard | |
| Aluminum checkered plate (3mm thick) | | | | | | Optional | |
| Rubber tile/carpet/marble/granite (supplied by customer) | | | | | | Optional | |
| Extruded hard aluminum | | | | | | | Standard |
| Stainless-steel | | | | | | | Optional |

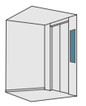
Note:
*1: Etching pattern EPA-1~6 only.
*2: Etching pattern EPA-1~3 only.
*3: Only available in dark gray.



Actual colors may differ slightly from those shown.

# Car Operating Panels

## For front return panel



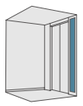
Segment LED indicator *1

Dot LED indicator
CBV■-C770 *2, 3, 4
(CBV■-C776) *2, 3, 4, 5

LCD indicator
CBV■-C780 *2, 3, 4
(CBV■-C786) *2, 3, 4, 5

Standard

CBV1-C760*3, 4
(CBV1-C766)*3, 4, 5



Segment LED indicator *1

Dot LED indicator
CBV■-C720 *2, 3
(CBV■-C726) *2, 3, 5

LCD indicator
CBV■-C730 *2, 3
(CBV■-C736) *2, 3, 5

CBV■-C710*2, 3
(CBV■-C716)*2, 3, 5

Segment LED indicator *1

Dot LED indicator
CBV■-D720 *2, 3, 6
(CBV■-D726) *2, 3, 5, 6

LCD indicator
CBV■-D730 *2, 3, 6
(CBV■-D736) *2, 3, 5, 6

Swing type
CBV■-D710*2, 3, 6
(CBV■-D716)*2, 3, 5, 6

Segment LED indicator *1

Dot LED indicator
CBU■-C720 *2, 3
(CBU■-C726) *2, 3, 5

LCD indicator
CBU■-C730 *2, 3
(CBU■-C736) *2, 3, 5

CBU■-C710*2
(CBU■-C716)*2, 5

LCD indicator only

Swing type
(10.4-inch)
CBV■-D740*2, 3, 6

Swing type
(15-inch)
CBV■-D750*2, 3, 6

CBVF-C258
Keypad type

Numbers: Flat buttons
Star: Tactile button
(stainless-steel matte)

Segment LED indicator *1

Dot LED indicator
CBN■-C720 *2, 3, 6
(flat buttons)

LCD indicator
CBN■-C730 *2, 3, 6
(flat buttons)

CBN■-C710*2, 3, 6
(flat buttons)

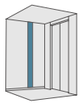
Notes:
*1: Segment LED indicators cannot display some letters of alphabet. Please consult our local agents for details.
*2: Please select a button type referring to page 27, and enter the number in the space shown as ■.
*3: Faceplates with stainless-steel, mirror-finish are also available (optional). Please consult our local agents for details.
*4: Maximum number of floors: 22 floors.
*5: The types in parentheses ( ) show auxiliary car operating panels (optional). The design is slightly different from the above images. Please consult our local agents for further information such as installation location.
*6: Please consult our local agents for the production terms, etc.



Actual colors may differ slightly from those shown.

# Car Operating Panels

## For side wall



Segment LED indicator *1

Dot LED indicator
CBV■-N720 *2, 3
(CBV■-N726) *2, 3, 4

LCD indicator
CBV■-N730 *2, 3
(CBV■-N736) *2, 3, 4

CBV■-N710 *2, 3
(CBV■-N716) *2, 3, 4

Segment LED indicator *1

Dot LED indicator
CBV■-N722 *2, 3
(CBV■-N727) *2, 3, 4, 5

LCD indicator
CBV■-N732 *2, 3
(CBV■-N737) *2, 3, 4, 5

CBV■-N712 *2, 3
(with alarm indication
and tactile buttons for EN81-70)
(CBV■-N717) *2, 3, 4, 5

Segment LED indicator *1

Dot LED indicator
CBU■-N720 *2, 3
(CBU■-N726) *2, 3, 4

LCD indicator
CBU■-N730 *2, 3
(CBU■-N736) *2, 3, 4

CBU■-N710 *2

LCD indicator (5.7-inch) only

Car destination floor indicator

CBVF-N228
Keypad type

CBVF-N229S
(with alarm indication
and buttons for EN81-70)
Keypad type

CBVF-N229L
(with alarm indication
and buttons for EN81-70)
Keypad type

Numbers: Flat buttons
Star: Tactile button
(stainless-steel matte)

Notes:
*1: Segment LED indicators cannot display some letters of alphabet. Please consult our local agents for details.
*2: Please select a button type referring to page 27, and enter the number in the space shown as ■.
*3: Faceplates with stainless-steel, mirror-finish are also available (optional). Please consult our local agents for details.
*4: The types in parentheses ( ) show auxiliary car operating panels (optional). The design is slightly different from the above images. Please consult our local agents for further information such as installation location.
*5: Please consult our local agents for the production terms, etc.



Actual colors may differ slightly from those shown.

# Hall Signal Fixtures

## Hall position indicators and buttons

Segment LED indicator*1,2,6
With plastic case

Standard

PIV■-A1010N*3 Boxless
PIV■-A1010B

Standard

PIV■-A1020N*3 Boxless
PIV■-A1020B

Segment LED indicator*1

PIV■-C710N *3,4,5

PIV■-C720N *3,4,6

LCD indicator

PIV■-C766N *3,4,5

PIV■-C776N *3,4,6

Dot LED indicator

PIV■-C730N *3,4,5

PIV■-C740N *3,4,6

## Hall buttons

With plastic case

HBV■-A1010N *3, 6 Boxless
HBV■-A1010B *3, 6

HBV■-C710N *3, 4

HBN■-C710N *3, 4, 6
(flat buttons only)

## No-entry indicators for EN81-73

HBV■-C711N *3, 4

SN-C10

## Hall lanterns

HLV-A21S

HLV-A31S

HLV-E65
Gold ornament

HLV-E66
Silver ornament

HLV-E71

HLH-A31S

HLV-A16S

HLH-A16S

## LCD position indicator

PIH-C117 (5.7-inch)

## LCD information displays

PIH-C216 (10.4-inch)

PIH-C226 (15-inch)

## Hall position indicators



PIH-D415
(Dot LED indicator)

PIH-D417
(Segment LED indicator)

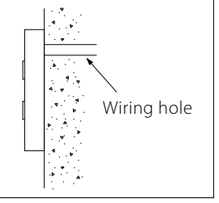
PID-D417*2
(Built into transom panel)

## Hall position indicator with lantern

PIE-B47*2

## Cross-section of boxless fixtures Boxless

These hall signal fixtures can be easily mounted on the wall surface without having to cut into the wall to embed the back box.




Notes:
*1: Segment LED indicators cannot display some letters of alphabet. Please consult our local agents for details.
*2: Dot LED indicators are available (optional). Please consult our local agents for details.
*3: Please select a button type referring to page 27, and enter the number in the space shown as ■.
*4: Faceplates with stainless-steel, mirror-finish are also available (optional). Please consult our local agents for details.
*5: These types are applicable to EN81-70 compliant elevators only in 1C-2BC where one car is controlled independently.
*6: These types are not applicable to elevators complying with EN81-70.



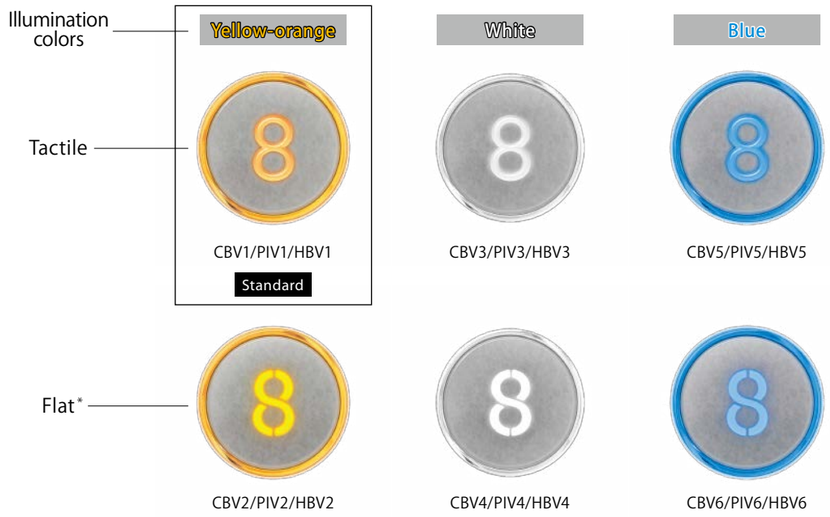
Actual colors may differ slightly from those shown.

# Button Line-up

### Buttons accented with LED halo illumination

Illuminated characters and halos attract user's attention.
Tactile and flat buttons (stainless-steel with non-directional hairline-finish) are available in three illumination colors: yellow-orange, white and blue.

CBV■／PIV■／HBV■




CBU■


### Square buttons

The entire buttons (excluding characters) are illuminated yellow-orange, white or blue.

CBN■／HBN■


Note:
* Flat buttons are not applicable to regulation EN81-70.



# Interior

## Mirrors

YZ-52A
Half-size

YZ-53A
Two-mirror set

YZ-55SN
Full height

## Handrails

YH-59S (SUS-HL)

YH-59M (SUS-M)

YH-59G (SUS-M)

YH-57S (SUS-HL)

Actual colors may differ slightly from those shown.
Please refer to page 20 for the explanations of SUS-HL and SUS-M.

# Hall Designs

## E-312 Splayed Jamb with Transom Panel
## E-212 Square Jamb with Transom Panel

**Hall Design Example of E-312**

| | |
|---|---|
| Jamb | SUS-HL |
| Transom panel | Colored (black) SUS-HE |
| Doors | Colored (black) SUS-HE |
| Hall lantern | HLV-E71 |
| Hall button | HBV3-C710N |


## E-312 Splayed Jamb with Transom Panel
## E-212 Square Jamb with Transom Panel


**Hall Design Example of E-312**

| | |
|---|---|
| Jamb | SUS-HL |
| Transom panel | SUS-HL |
| Doors | See-through doors |
| LCD information display | PIH-C226 |
| Hall button | HBV5-C710N |

## E-302 Splayed Jamb
## E-202 Square Jamb

**Hall Design Example of E-302**

| | |
|---|---|
| Jamb | SUS-HL |
| Doors | Painted steel sheet (Y033: White) |
| Hall lantern | HLV-E66 |
| Hall button | HBV1-C710N |

## E-102 Narrow Jamb Standard

**Hall Design Example**

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

## Entrance Finish Application Table

Please refer to pages 31 and 32 for materials and colors.

| Materials/Finishes | Jamb | Transom panel | Doors | Sill |
|---|---|---|---|---|
| Stainless-steel, hairline-finish (SUS-HL) | Standard | Optional | Standard | |
| Painted steel sheet | Optional | Optional | Optional | |
| Stainless-steel, hairline-finish with etched pattern (SUS-HE) | | Optional | Optional | |
| Stainless-steel, mirror-finish (SUS-M) | | | Optional | |
| Glass windows [1300(H)×200(W)/1300(H)×300(W)] | | | Optional | |
| See-through doors | | | Optional | |
| Extruded hard aluminum | | | | Standard |
| Stainless-steel | | | | Optional |



Actual colors may differ slightly from those shown.

# Materials and Colors

## [Car] Walls, doors and transom panel

**Colored stainless-steel, hairline-finish**

Gold　Bronze

**Etching patterns** (gold or bronze)
*Please refer to the etching finish pattern book, EFA1, for details.

EPA-1　EPA-2　EPA-3

Non-etched surface
Etched surface

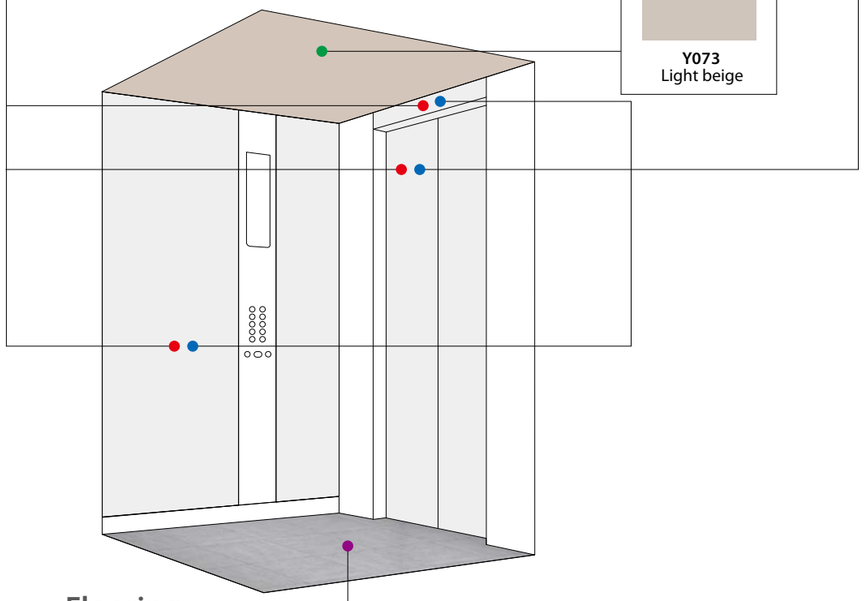
**Pattern-printed steel sheet**

CP23 Minimal stripe
CP101 Silver
CP111 Dark grain
CP121 Primary grain
CP141 Bright slate

## Ceiling

**Painted steel sheet**
(L210, N300, customized-1, customized-2 only)

Y033 White
Y055 Dark gray
Y073 Light beige



## Flooring

**Durable vinyl tiles**

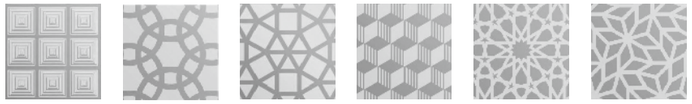
PR801 Cream beige
PR803 Gray
PR810 Ocher
PR812 Dim-gray

## [Car ] Walls, doors and transom panel
## [Hall] Doors, transom panel and jamb

**Stainless-steel**

Hairline-finish　Mirror-finish (not applicable to the hall transom panel and jamb)

**Etching patterns** (stainless-steel)
*Not applicable to the jamb; please refer to the etching finish pattern book, EFA1, for details.

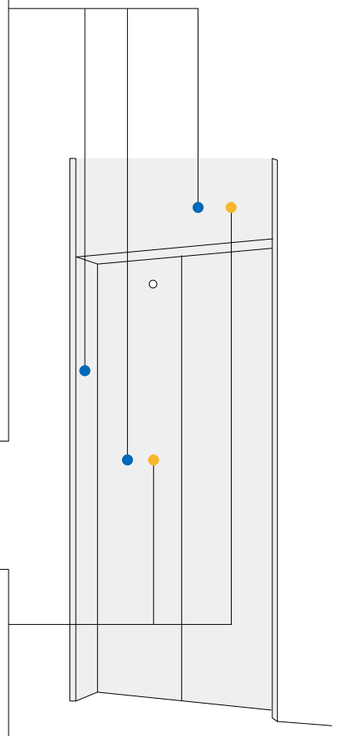


EPA-1　EPA-2　EPA-3　EPA-4　EPA-5　EPA-6

Non-etched surface
Etched surface

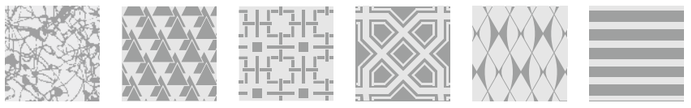
**Painted finish**

Y002 Dark brown
Y004 Beige
Y006 Green
Y014 Red-violet
Y016 Light brown
Y033 White
Y051 Pink
Y054 Pale yellow
Y055 Dark gray
Y071 Neutral beige
Y116 Blue



## [Hall] Doors and transom panel

**Etching patterns** *Please refer to the etching finish pattern book, EF4, for details.



EP-A-004　EP-A-011　EP-A-021　EP-B-009　EP-D-006　EP-F-004



Actual colors may differ slightly from those shown.

# 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 11 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.) | ◎ | ◎ | ◎#2 |
| 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.) | ◎ | ◎ | ◎#2 |
| **■ 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. | Ⓢ#3 | Ⓢ | Ⓢ |
| 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. | Ⓢ | Ⓢ | Ⓢ |

Notes: 1C-2BC (1-car selective collective) - Standard, 2C-2BC (2-car group control system) - 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: • 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.
#3: Optional when the operation system is 1C-2BC.



| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ OPERATIONAL AND SERVICE FEATURES (Continued from the previous page.)** | | | | | |
| 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. | ◎ | ◎ | ◎ |
| 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. | Ⓢ | Ⓢ | Ⓢ |
| High Accuracy Landing Feature | HARL | The car landing level is adjusted to a high level of precision in order to ensure a landing accuracy of ±5mm under any conditions. | Ⓢ | Ⓢ | Ⓢ |
| 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. | Ⓢ | Ⓢ | Ⓢ |
| Motor Drive Mix | MDX | The rate of car acceleration and deceleration is automatically increased according to the car load to reduce passenger waiting and travel time. | — | ◎ | ◎ |
| 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. | ◎ | ◎ | ◎ |
| 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. | Ⓢ | Ⓢ | Ⓢ |
| 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. | ◎ | ◎ | ◎ |
| Rope Replacement Alarm | RRA | This self-diagnosis function gives an alert when rope replacement timing has approached. | Ⓢ | Ⓢ | Ⓢ |
| 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. | ◎ | ◎ | ◎ |
| **■ 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. | — | ◎ | ◎ |
| 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. | — | ◎#1 | ◎ |
| 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. | — | — | ◎#2 |

# Features (2/2)

| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ GROUP CONTROL FEATURES (Continued from the previous page.)** | | | | | |
| 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. | — | — | Ⓢ |
| 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 — Power Reduction during Off-peak | ESO-A | To save energy, some elevators are automatically put into sleep mode if there are no calls for a specified period. | — | ◎#1 | Ⓢ#1 |
| Energy-saving Operation — Speed Control | ESO-V | To save energy, the car speed is automatically reduced to some extent, but not so much that it adversely affects passenger waiting time. | — | ◎#1 | ◎ |
| 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. | ◎ | ◎ | ◎ |
| Intense Up Peak | IUP | To maximize transport efficiency, an elevator bank is divided into two groups of cars to serve upper and lower floors separately during up peak. In addition, the number of cars to be allocated, the timing of car allocation to the lobby floor, the timing of door closing, etc. are controlled based on predicted traffic data. | — | — | ◎ |
| 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. (In China, the car parks with the doors closed.) | ◎ | ◎ | ◎ |
| 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 | ◎ |
| 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. | — | ◎ | ◎ |

| Feature | Abbreviation | Description | 1C to 2C 2BC | 3C to 4C ΣAI-22 | 3C to 8C ΣAI-2200C |
|---|---|---|---|---|---|
| **■ 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. In addition, customized video images can be displayed in full-screen or partial-screen formats. | ◎#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. In addition, customized video images can be displayed in full-screen or partial-screen formats. | ◎#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 system) - 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.

# Specifications

## Capacity and Speed[*1]

| Rated capacity (kg) | Number of persons | Rated speed (m/sec) | | | | | | | | | | | Mitsubishi Electric Standard | EN81-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | | |
| 750 | 10 | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ☆ |
| | 11 | | | | | | | | | | | | ☆ | |
| 900 | 12 | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ☆ |
| | 13 | | | | | | | | | | | | ☆ | |
| 1000 | 15 | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ☆ | |
| 1050 | 14 | | | | | | | | | | | | | ☆ |
| 1150 | 17 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ | |
| 1200 | 16 | | | | | | | | | | | | | ☆ |
| 1350 | 18 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | | ☆ |
| | 20 | | | | | | | | | | | | ☆ | |
| 1600 | 21 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | | ☆ |
| | 24 | | | | | | | | | | | | ☆ | |
| 1800 | 24 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | | ☆ |
| | 27 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ | |
| 2000 | 26 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | | ☆ |
| | 30 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ | |
| 2250 | 30 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ☆ |
| | 34 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ☆ | |
| 2500 | 33 | ○ | ○ | ○ | ○ | ○ | | | | | | | | ☆ |
| | 38 | ○ | ○ | ○ | ○ | ○ | | | | | | | ☆ | |
| 3000 | 40 | ○ | ○ | ○ | ○ | ○ | | | | | | | | ☆ |
| | 46 | ○ | ○ | ○ | ○ | ○ | | | | | | | ☆ | |

Notes:
*1: The symbol ○ shown in the table indicates that a technical inquiry is required.
The symbol ● shown in the table indicates that a technical inquiry is required depending on conditions.

## Specifications[*2]

| Rated speed (m/sec) | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum number of stops | 64 | | | | | | | Please consult our local agents. | | | |
| Maximum travel (m) | 250 [*3] | | | | | | | Please consult our local agents. | | | |
| Minimum floor to floor height (mm) | 2500 [*4] | | | | | | | | | | |

Notes:
*2: Please consult our local agents if the maximum travel exceeds the values specified in the above table.
*3: Excluding the rated capacity 2250kg to 3000kg. Please consult our local agents for maximum travel.
*4: For some elevator specifications, the floor height (distance between floors) must be a minimum of 2500mm.
Please consult our local agents if the floor height is less than "Entrance height HH + 700mm".

## Door System

| | |
|---|---|
| Standard | 2-panel center opening (CO) |
| Optional | 2-panel side sliding opening (2S) or 4-panel center opening (2CO) |

## Operation System

| | |
|---|---|
| Standard | 1-car selective collective (1C-2BC) |
| Optional | 2-car group control system (2C-2BC), 3- or 4-car group control ΣAI-22 system, or 3- to 8-car group control ΣAI-2200C system |



# Important Information on Elevator Planning

## Work Not Included in Elevator Contract

The following items are excluded from Mitsubishi Electric's elevator installation work. Their details or conditions are to be conformed to the statement of local laws or Mitsubishi Electric elevator's requirements, are therefore the responsibility of the building owner or general contractor.

- Construction of the elevator machine room with proper beams and slabs, equipped with a lock, complete with illumination, ventilation and waterproofing.
- Access to the elevator machine room sufficient to allow passage of the control panel and traction machine.
- Architectural finishing of the machine room floor, and 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.
- Separate beams, when the hoistway dimensions markedly exceed the specifications, 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, and their electrical switch boxes in the machine room, and laying of the wiring from the electrical room.
- The provision of outlets and laying of the wiring in the machine room and 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 Mitsubishi Electric's 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.

## Elevator Site Requirements

- The temperature of the machine room and 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 machine room and elevator hoistway.
  c. The machine room and 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.

## ● Capacity and Speed *1

| Rated capacity (kg) | Number of persons | Rated speed (m/sec) | | | | | | | | | | | EN81-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | |
| 750 | 10 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 900 | 12 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 1050 | 14 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 1200 | 16 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 1350 | 18 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 1600 | 21 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 1800 | 24 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 2000 | 26 | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ☆ |
| 2250 | 30 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ☆ |
| 2500 | 33 | ○ | ○ | ○ | ○ | ○ | | | | | | | ☆ |
| 3000 | 40 | ○ | ○ | ○ | ○ | ○ | | | | | | | ☆ |

Notes:
*1: The symbol ○ shown in the table indicates that a technical inquiry is required.
The symbol ● shown in the table indicates that a technical inquiry is required depending on conditions.
*2: Refer to page 5 to 12 for the hoistway and machine room layout plans for the models with specifications marked in gray (▭).
For the layouts for models with other specifications, please consult our local agents.

## ● Specifications *1

| Rated speed (m/sec) | | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum number of stops | | 64 | | | | | | | Please consult our local agents. | | | |
| Maximum travel (m) *2 | 750kg | 150 | | Please consult our local agents. | | | | | | | | |
| | 900kg | 150 | | | | Please consult our local agents. | | | | | | |
| | 1050kg | 150 | | 250 | | | Please consult our local agents. | | | | | |
| | 1200kg | | | | | 250 | | | Please consult our local agents. | | | |
| | 1350kg | 200 | | | | | | | | | | |
| | 1600kg | | | | | | | | | | | |
| | 1800kg | 250 | | | | | | | | | | |
| | 2000kg | | | | | | | | | | | |
| Minimum floor height (mm) | | 2500 *3 | | | | | | | | | | |

Notes:
*1: Please consult our local agents if the maximum travel exceeds the values specified in the above table.
*2: For the rated capacity 2250kg to 3000kg, please consult our local agents for maximum travel.
*3: For some elevator specifications, the floor height (distance between floors) must be a minimum of 2500mm.
Please consult our local agents if the floor height is less than “Entrance height HH + 700mm”.

## ● Control, Door and Operation Systems

●: Applicable —: Not applicable

| Number of elevators in a bank | Control system | Door system | Operation system | | | |
|---|---|---|---|---|---|---|
| | | | 1-car selective collective (Standard) | 2-car group control system (optional) | ΣAI-22 group control system (option) | ΣAI-2200C group control system (option) |
| 1 car | VVVF control and Data Network System with multiple microprocessor modules (VFGH) | VVVF control with microprocessor, 2-panel center opening <CO> (Standard), 2-panel side opening <2S> (option), 4-panel center opening <2CO> (option) | ● (1C-2BC) | — | — | — |
| 2 cars | | | — | ● (2C-2BC) | — | — |
| 3 cars | | | — | — | ● (3C-ΣAI-22) | ● (3C-ΣAI-2200C) |
| 4 cars | | | — | — | ● (4C-ΣAI-22) | ● (4C-ΣAI-2200C) |
| 5 cars | | | — | — | — | ● (5C-ΣAI-2200C) |
| 6 cars | | | — | — | — | ● (6C-ΣAI-2200C) |
| 7 cars | | | — | — | — | ● (7C-ΣAI-2200C) |
| 8 cars | | | — | — | — | ● (8C-ΣAI-2200C) |

### Selective collective (2BC)

The system consists of call buttons in the car, and a riser of up and down destination floor buttons installed at each elevator hall (single button at terminal floors), which connect electrically with microprocessors supervising floor selection and direction of travel. A car will respond to those car and hall calls that comply with its direction of service.
When there are no more calls registered for the car’s direction of travel, the car’s service direction is reversed.

### ΣAI-22 & ΣAI-2200C Group Control Systems

The systems, which employ an intelligent expert system and fuzzy logic, are specially designed for group control of 3 to 8 elevators (as described above). Practical information required for group control is stored in the system's memory as a “Knowledge Database”. Drawing from this database, various traffic conditions are monitored and analyzed applying IF-THEN decision rules to maximize the effectiveness of each elevator operation.
The systems perform assignments to the most-used locations, and thereby provide superb efficiency and service.
In addition to the above, ΣAI-2200C system performs optimal car allocation using Dynamic Rule-set Optimizer.

Elevator traffic reaches a peak when people employed in the building arrive for work in the morning, when they break for lunch at midday, and when they leave for home in the evening. Obviously, the elevators must be capable of handling the increased traffic during these peaks. And during actual business hours, the elevators must be able to respond promptly to serve the people who are on the move inside the building as well as those who arrive at or leave the building. So that the elevators best suited to the conditions and environment at hand can be selected, Mitsubishi Electric applies computer simulation, traffic computation, and other techniques based on its wealth of experience in this field to offer a wide range of elevator consulting services. Given below are reference data useful for general planning.

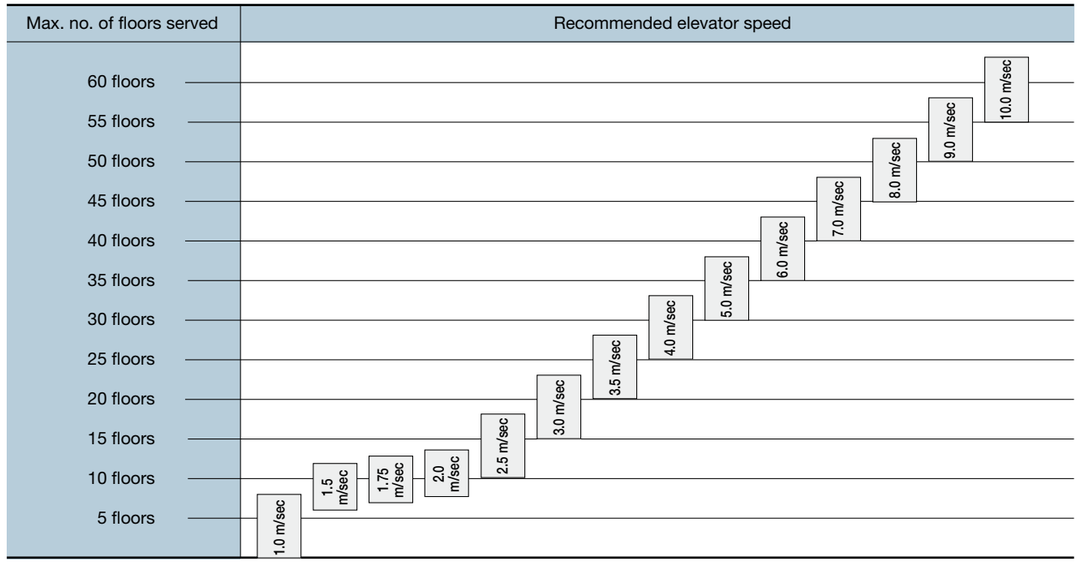
### Selecting the Elevator Speed

The maximum number of floors served in a building serves as the criterion for selecting the speed at which the elevators should travel. To select elevators using the chart below, if the building has 23 floors, select elevators with a speed of 3.5m/sec or 4.0m/sec.

Note: The following chart shows the recommended elevator speed per maximum number of service floors. The best suited speed varies depending on the following factors:

*Building usage;
*Single-tenant building or multi-tenant building;
*Floor heights;
*Population in the building;
*Number of elevators in the group; or
*Capacity of the elevator.

Please consult our local agents for details.




## Selecting the Operation System

| Scale of building / Number of elevators / Operation system | Medium-scale office building | | | Large-scale office building | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1-car selective collective (2BC) | ◎ | | | | | | | |
| 2-car group control system (2BC) | | ◎ | | | | | | |
| ΣAI-22 group control system | | | ◎ | | | | | |
| ΣAI-2200C group control system | | | | ◎ | ◎ | ◎ | ◎ | ◎ |

Applicable system ◎ Recommended system





## Notes on Installation Planning

### Elevator Arrangement

- Elevator installations should be properly planned according to such factors as the size and nature or kind of the building, the traffic flow and peak traffic demand or conditions, the location of public transportation facilities and stores.
- Dispersing elevators in different areas of a building adversely affects their passenger-carrying efficiency. Therefore, elevators should, as far as possible, be concentrated in the center of the building.
- When two groups of elevators face each other, ample space should be left between the groups.
- The number of elevators in each group should be decided on the basis of the physical arrangement of the elevators and the floors served.
- As much as possible, all the floors served by one group of elevators should be functionally and structurally similar. Dissimilarity among the floors served will result in a drop in service level.
- In residential buildings, hotels, and the like, it is not desirable for the elevator hall to be located farther than 50 meters from any apartment or room.

### Points Relating to the Hoistway

- In steel-reinforced concrete buildings, design the hoistways so that concrete walls are at least 120mm thick.
- Hoistways must be no more than 30mm out of plumb.
- No wiring or distribution panels should be built into or mounted on hoistway walls.
- It is forbidden under most building codes to install any conduit work or piping in hoistways except as required for the elevator itself.
- Pit-depth and overhead-height dimensions must always be at least the minimum shown in the drawings.
- If it proves necessary to make use of space below the pit, contact our local subcontractor.
- When the building is to be of steel construction, our local subcontractor should be brought into the discussion at the earliest possible moment.

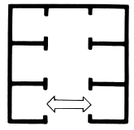
### Points Relating to the Machine Room

- Provide the recommended width and height to assure that there will be sufficient room for inspection and maintenance.
- Since the elevator drive equipment generates considerable heat, sufficient ventilation and or air-conditioning capacity must be provided to assure that the machine-room temperature does not exceed 40°C.
  Refer to elevator site requirements at page 18 for details.
- When occupied areas of the building are in close proximity to the machine room, such as in the case of elevators for the low and middle floors of a high-rise building, it may be desirable to provide additional soundproofing or intervening walls.

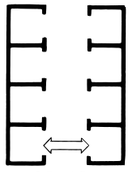
## Some Examples of Bank Arrangements

### Desirable Plans

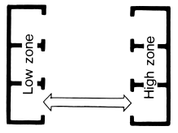
Bank of 4 elevators, in-line arrangement.




Group of 6 elevators, alcove arrangement.



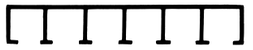

Group of 8 elevators, facing arrangement. Plan the building traffic flow to minimize through-traffic in the elevator hall.



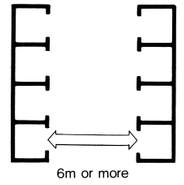

Two banks, facing arrangement.

### Undesirable Plans


Two banks, in-line arrangement. Inconvenient because of confusion as to the dividing point.

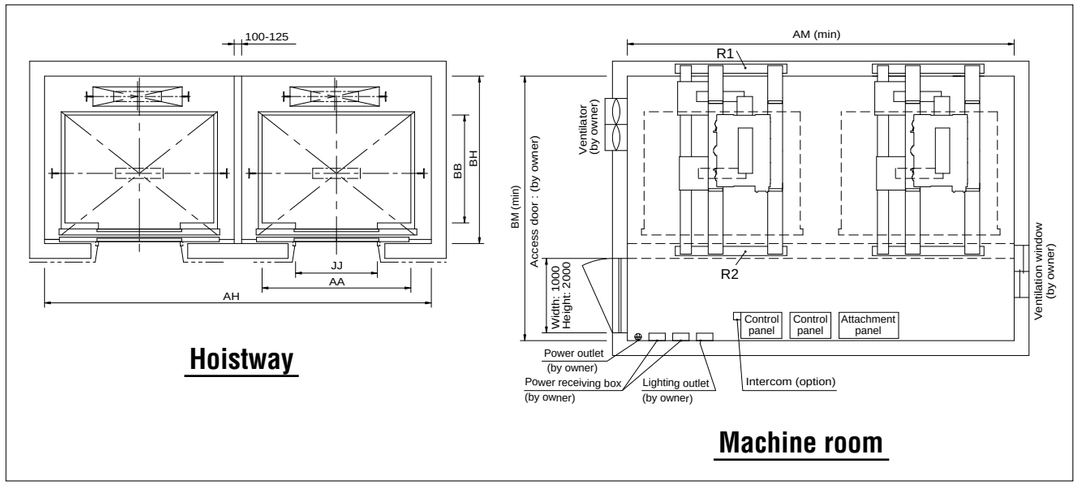


Bank of 6 elevators, in-line arrangement. Inconvenient because of increased walking distance and time.




8 elevators in one bank set at too great a distance.

## Layout example of in-line arrangement




## Dimension table of car, hoistway and machine room

| Rated speed (m/sec) | Code number | Rated capacity (kg) | Number of persons | Entrance width JJ (mm) | Car internal dimensions (mm) | Internal dimensions of hoistway (mm) *1 | | Internal dimensions of machine room (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | In-line arrangement | | |
| | | | | | | 1-unit installation | 2-unit installation | 2-unit installation |
| | | | | | Width × Depth AA × BB | Width × Depth AH × BH | Width × Depth AH × BH | Width × Depth AM × BM |
| 2.0 2.5 | P10 | 750 | 10 | 800 | 1400 × 1300 | 1900 × 2050 | 3900 × 2050 | 4500 × 3455 |
| | P12 | 900 | 12 | 900 | 1600 × 1300 | 2100 × 2050 | 4300 × 2050 | 4700 × 3455 |
| | P14 | 1050 | 14 | 900 | 1600 × 1500 | 2100 × 2250 | 4300 × 2250 | 4700 × 3655 |
| | P16 | 1200 | 16 | 1000 | 1800 × 1500 | 2300 × 2250 | 4700 × 2250 | 4900 × 3655 |
| | P18 | 1350 | 18 | 1100 | 2000 × 1500 | 2500 × 2250 | 5100 × 2250 | 5100 × 3655 |
| | P21 | 1600 | 21 | 1100 | 2000 × 1700 | 2500 × 2450 | 5100 × 2450 | 5100 × 3855 |
| | P24 | 1800 | 24 | 1100 | 2100 × 1750 | 2600 × 2550 | 5300 × 2550 | 5400 × 3955 |
| | P26 | 2000 | 26 | 1100 | 2100 × 1950 | 2600 × 2750 | 5300 × 2750 | 5400 × 4105 |
| 3.0 | P12 | 900 | 12 | 900 | 1600 × 1300 | 2100 × 2050 | 4300 × 2050 | 4700 × 3455 |
| | P14 | 1050 | 14 | 900 | 1600 × 1500 | 2100 × 2300 | 4300 × 2300 | 4700 × 3655 |
| | P16 | 1200 | 16 | 1000 | 1800 × 1500 | 2300 × 2300 | 4700 × 2300 | 4900 × 3655 |
| | P18 | 1350 | 18 | 1100 | 2000 × 1500 | 2500 × 2300 | 5100 × 2300 | 5100 × 3655 |
| | P21 | 1600 | 21 | 1100 | 2000 × 1700 | 2500 × 2500 | 5100 × 2500 | 5100 × 3855 |
| | P24 | 1800 | 24 | 1100 | 2100 × 1750 | 2600 × 2550 | 5300 × 2550 | 5400 × 3955 |
| | P26 | 2000 | 26 | 1100 | 2100 × 1950 | 2600 × 2750 | 5300 × 2750 | 5400 × 4105 |

★ All the above dimensions are calculated based on EN81-1 (1998).
★ The dimensions shown are minimum requirements, particularly in the figures of TC, OH and PD.
Necessary tolerance should be separately considered for the building construction errors.
★ The dimensions TC, OH, PD and reaction load are calculated according to car and hoistway dimensions on the above table and conditions.

Note:
*1: The dimensions PD, OH and BH are calculated when the counterweight without safety gear is located in back of the car.

## Reaction loads in machine room and pit (Unit: kN)

| Rated speed (m/sec) | | Rated capacity (kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 | 1800 | 2000 |
| 2.0 2.5 | R1 | 94 | 94 | 123 | 112 | 149 | 156 | 174 | 200 |
| | R2 | 63 | 63 | 82 | 74 | 100 | 104 | 116 | 134 |
| | P1 | 129 | 137 | 178 | 159 | 191 | 195 | 227 | 246 |
| | P2 | 121 | 124 | 164 | 142 | 182 | 181 | 196 | 227 |
| 3.0 | R1 | – | 106 | 157 | 158 | 160 | 161 | 191 | 193 |
| | R2 | | 70 | 105 | 106 | 106 | 107 | 127 | 129 |
| | P1 | | 149 | 205 | 191 | 196 | 214 | 245 | 245 |
| | P2 | | 138 | 200 | 185 | 182 | 189 | 215 | 215 |

## Pit-depth (PD) *1

(Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 | 1800 | 2000 |
| 2.0 | TR≦100 | 2080 | | | | | | | |
| | 100<TR≦150 | 2800 | | | | | | | |
| | 150<TR≦200 | – | | | | 3050 | | | |
| | 200<TR≦250 | – | | | | | | 3150 | |
| 2.5 | TR≦100 | 2080 | | | | | | | |
| | 100<TR≦150 | 2840 | | | | | | | |
| | 150<TR≦200 | – | | | | 3200 | | | |
| | 200<TR≦250 | – | | | | | | 3300 | |
| 3.0 | TR≦100 | – | 2650 | | | | | | |
| | 100<TR≦150 | – | 3330 | | | | 3350 | 3330 | |
| | 150<TR≦200 | – | 3500 | | | | | | |
| | 200<TR≦250 | – | 3600 | | | | | | |

## Top clearance (TC)

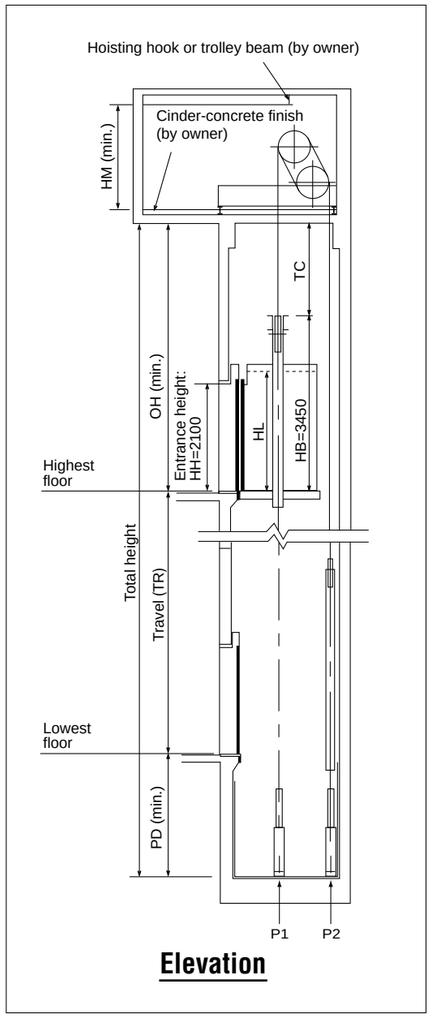
(Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | |
|---|---|---|
| | TR≦100 | 100<TR≦250 |
| 2.0 | 1760 | 1910 |
| 2.5 | 1840 | 1990 |
| 3.0 | 2190 | 2340 |

## Machine-room height (HM)

(Unit: mm)

| Rated speed (m/sec) | Regulation |
|---|---|
| | EN81-1 |
| 2.0 2.5 3.0 | 2500 |



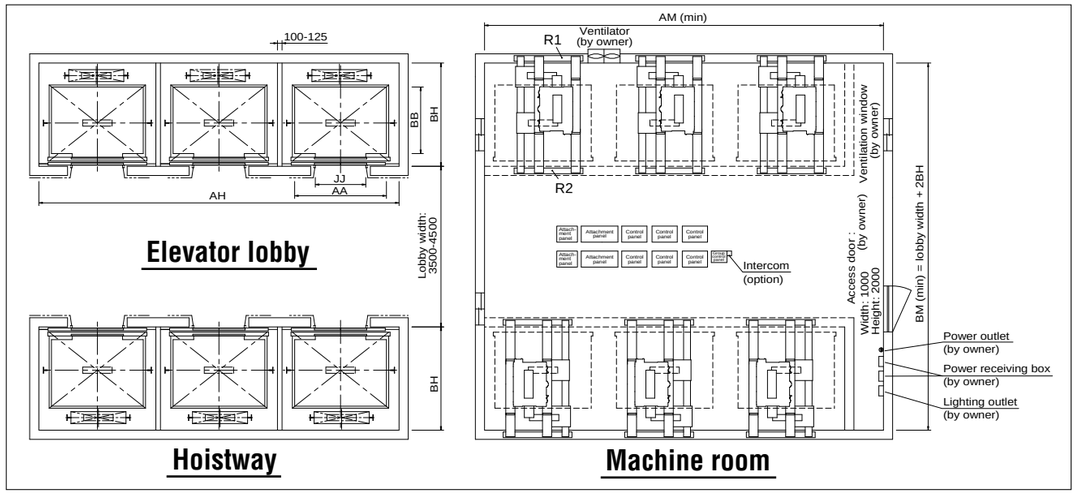

## Overhead-height (OH) *1

(Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 | 1800 | 2000 |
| 2.0 | TR≦100 | 5210 | | | | | | | |
| | 100<TR≦150 | 5360 | | | | | | | |
| | 150<TR≦200 | – | | | | 5360 | | | |
| | 200<TR≦250 | – | | | | | | 5360 | |
| 2.5 | TR≦100 | 5290 | | | | | | | |
| | 100<TR≦150 | 5440 | | | | | | | |
| | 150<TR≦200 | – | | | | 5440 | | | |
| | 200<TR≦250 | – | | | | | | 5440 | |
| 3.0 | TR≦100 | – | 5640 | | | | | | |
| | 100<TR≦150 | – | 5790 | | | | | | |
| | 150<TR≦250 | – | 5790 | | | | | | |

Note: The dimensions OH are calculated when the car frame height (HB) is 3450mm.

## Layout example of facing arrangement




## Reaction loads in machine room and pit (Unit: kN)

| Rated speed (m/sec) | | Rated capacity (kg) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 *2 | | 1800 | 2000 |
| | | | | | | | PM040MR | PML-F50 | | |
| 3.5 | R1 | – | 106 | 157 | 158 | 160 | 161 | – | 191 | 193 |
| | R2 | | 70 | 105 | 106 | 106 | 107 | | 127 | 129 |
| | P1 | | 149 | 205 | 196 | 196 | 214 | | 245 | 245 |
| | P2 | | 138 | 200 | 185 | 182 | 189 | | 215 | 215 |
| 4.0 | R1 | – | | 158 | 159 | 159 | 162 | 188 | 191 | 193 |
| | R2 | | | 105 | 106 | 106 | 108 | 125 | 127 | 129 |
| | P1 | | | 204 | 194 | 194 | 214 | 241 | 245 | 249 |
| | P2 | | | 199 | 185 | 182 | 190 | 215 | 215 | 215 |

## Pit-depth (PD) *1 (Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 | 1800 | 2000 |
| 3.5 | TR≦100 | – | 3020 | | | | | | |
| | 100<TR≦150 | | 3370 | | | | | | |
| | 150<TR≦200 | – | 3660 | | | | | | |
| | 200<TR≦250 | | 3760 | | | | | | |
| 4.0 | TR≦200 | – | 3920 | | | | | | |
| | 200<TR≦250 | | 4020 | | | | | | |

## Dimension table of car, hoistway and machine room

| Rated speed (m/sec) | Code number | Rated capacity (kg) | Number of persons | Entrance width JJ (mm) | Car internal dimensions (mm) | Internal dimensions of hoistway (mm) *1 | Internal dimensions of machine room (mm) |
|---|---|---|---|---|---|---|---|
| | | | | | | In-line arrangement | |
| | | | | | | 2-unit installation | 2-unit installation |
| | | | | | Width × Depth AA × BB | Width × Depth AH × BH | Width × Depth AM × BM |
| 3.5 | P12 | 900 | 12 | 900 | 1600 × 1300 | 4400 × 2100 | 4750 × 3455 |
| 3.5 4.0 | P14 | 1050 | 14 | 900 | 1600 × 1500 | 4400 × 2300 | 4750 × 3655 |
| | P16 | 1200 | 16 | 1000 | 1800 × 1500 | 4800 × 2300 | 4950 × 3655 |
| | P18 | 1350 | 18 | 1100 | 2000 × 1500 | 5200 × 2300 | 5200 × 3655 |
| | P21 | 1600 | 21 | 1100 | 2000 × 1700 | 5200 × 2500 | 5200 × 3855 *3 |
| | P24 | 1800 | 24 | 1100 | 2100 × 1750 | 5400 × 2550 | 5400 × 3955 |
| | P26 | 2000 | 26 | 1100 | 2100 × 1950 | 5400 × 2750 | 5400 × 4105 |

★ All the above dimensions are calculated based on EN81-1 (1998).
★ The dimensions shown are minimum requirements, particularly in the figures of TC, OH and PD.
Necessary tolerance should be separately considered for the building construction errors.
★ The dimensions TC, OH, PD and reaction load are calculated according to car and hoistway dimensions on the above table and conditions.

Notes:
*1: The dimensions PD, OH and BH are calculated when the counterweight without safety gear is located in back of the car.
*2: Traction machine for the rated capacity 1600kg differs depending on the car weight.
*3: AM×BM is 5300×3855 only when the rated speed is 4.0m/sec and traction machine type is PML-F50.

## Top clearance (TC) (Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | | |
|---|---|---|---|
| | TR≦100 | 100<TR≦150 | 150<TR≦250 |
| 3.5 | 2520 | 2670 | |
| 4.0 | 3070 | | |

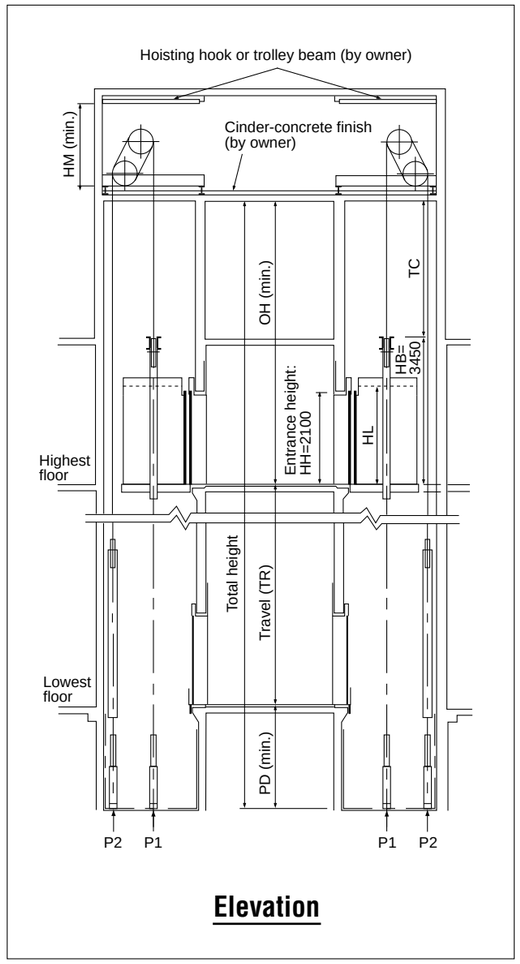
## Machine-room height (HM) (Unit: mm)

| Rated speed (m/sec) | Regulation |
|---|---|
| | EN81-1 |
| 3.5 4.0 | 2500 |

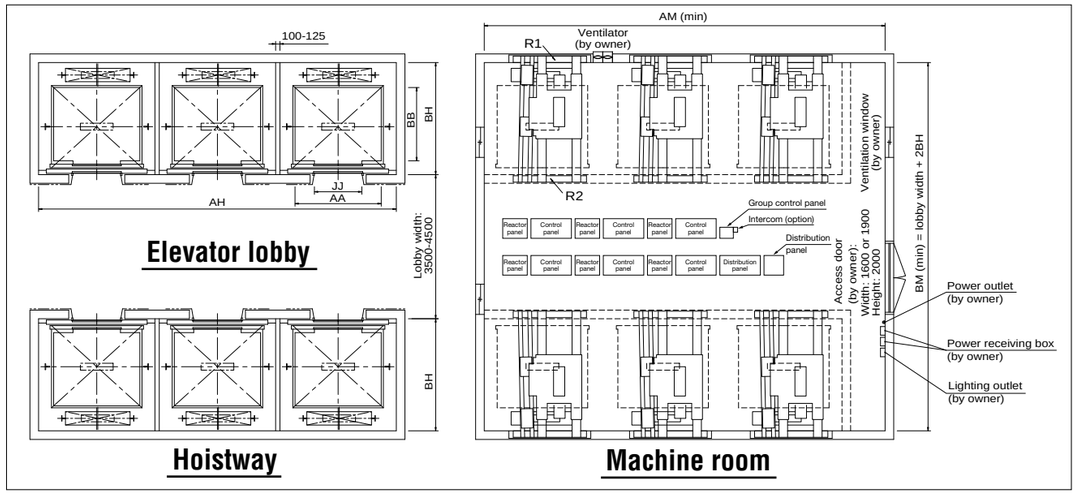
## Overhead-height (OH) *1 (Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 750 | 900 | 1050 | 1200 | 1350 | 1600 | 1800 | 2000 |
| 3.5 | TR≦100 | – | 5970 | | | | | | |
| | 100<TR≦150 | – | 6120 | | | | | | |
| | 150<TR≦250 | – | 6120 | | | | | | |
| 4.0 | TR≦250 | – | 6520 | | | | | | |

Note: The dimensions OH are calculated when the car frame height (HB) is 3450mm.



## Layout example of facing arrangement




## Reaction loads in machine room and pit (Unit: kN)

| Rated speed (m/sec) | | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 5.0 | R1 | 165 | 175 | 185 | 195 | 195 |
| | R2 | 110 | 120 | 125 | 130 | 130 |
| | P1 | 215 | 215 | 225 | 240 | 240 |
| | P2 | 205 | 210 | 205 | 220 | 220 |

## Pit-depth (PD) dimensions (Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 5.0 | TR≦150 | 4050 | | | | |
| | 150<TR≦200 | 4350 | | | | |
| | 200<TR≦250 | 4450 | | | | |

## Dimension table of car, hoistway and machine room

| Rated speed (m/sec) | Code number | Rated capacity (kg) | Number of persons | Entrance width JJ (mm) | Car internal dimensions (mm) | Internal dimensions of hoistway (mm) *1 | Internal dimensions of machine room (mm) |
|---|---|---|---|---|---|---|---|
| | | | | | | In-line arrangement | |
| | | | | | | 2-unit installation | 2-unit installation |
| | | | | | Width × Depth AA × BB | Width × Depth AH × BH | Width × Depth AM × BM |
| 5.0 | P16 | 1200 | 16 | 1000 | 1800 × 1450 | 5100 × 2300 | 5300 × 4000 |
| | P18 | 1350 | 18 | 1100 | 2000 × 1450 | 5500 × 2300 | 5500 × 4000 |
| | P21 | 1600 | 21 | 1100 | 2000 × 1700 | 5500 × 2550 | 5500 × 4250 |
| | P24 | 1800 | 24 | 1100 | 2100 × 1750 | 5700 × 2650 | 5700 × 4300 |
| | P26 | 2000 | 26 | 1100 | 2100 × 1950 | 5700 × 2850 | 5700 × 4450 |

★ All the above dimensions are calculated based on EN81-1 (1998).
★ The dimensions shown are minimum requirements, particularly in the figures of TC, OH and PD. Necessary tolerance should be separately considered for the building construction errors.
★ TC, OH, PD and reaction load are calculated according to car and hoistway dimensions on the above table. (When the counterweight is back drop.)
★ The shaft independently housing a single car is not recommended because noise increases. Please consult our local agents if the shaft of that kind is required.

Note:
*1: The dimensions BH are calculated when the counterweight is equipped without safety gear.

## Top clearance (TC) dimensions (Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | |
|---|---|---|
| | TR≦150 | 150<TR≦250 |
| 5.0 | 3200 | 3600 |

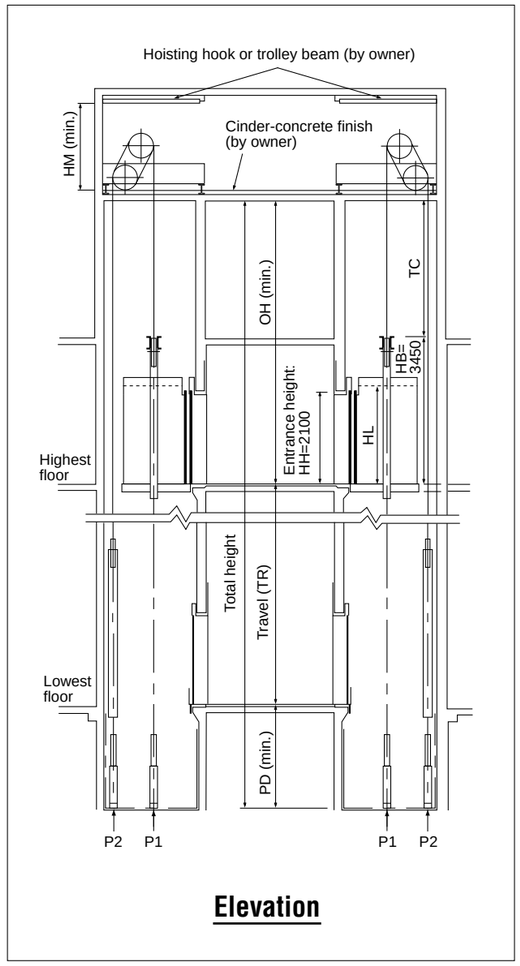
## Machine-room height (HM) (Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 5.0 | TR≦150 | 2300 | | | | |
| | 150<TR≦250 | 2300 | | | 2800 | |

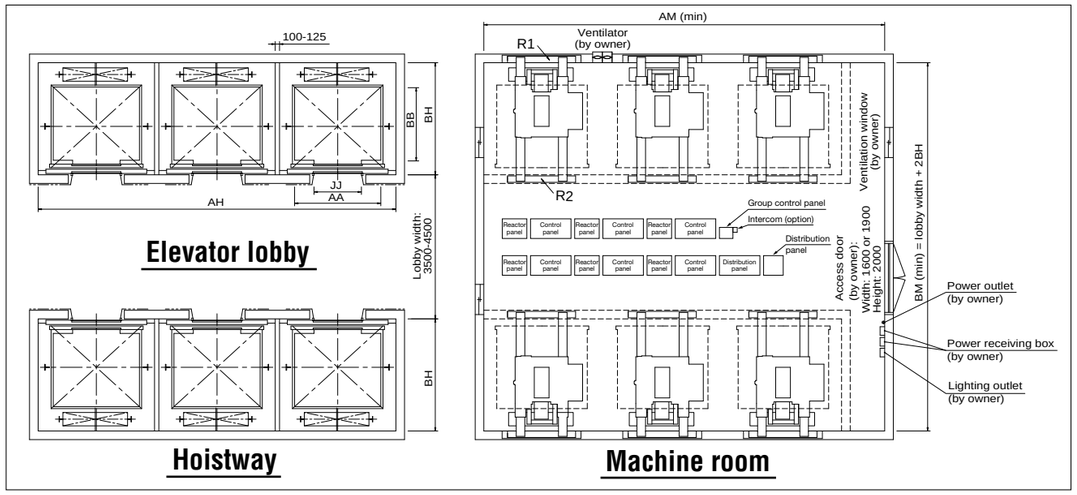
## Overhead-height (OH) dimensions (Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 5.0 | TR≦150 | 6650 | | | | |
| | 150<TR≦250 | 7050 | | | | |

Note: The dimensions OH are calculated when the car frame height (HB) is 3450mm.



## Layout example of facing arrangement




## Reaction loads in machine room and pit (Unit: kN)

| Rated speed (m/sec) | | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 6.0 | R1 | 170 | 170 | 185 | 195 | 195 |
| | R2 | 115 | 115 | 125 | 130 | 130 |
| | P1 | 215 | 215 | 230 | 240 | 240 |
| | P2 | 210 | 205 | 215 | 220 | 220 |

## Pit-depth (PD) dimensions (Unit: mm)

| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 6.0 | TR≦150 | 4050 | | | | |
| | 150<TR≦200 | 4350 | | | | |
| | 200<TR≦250 | 4450 | | | | |

## Dimension table of car, hoistway and machine room

| Rated speed (m/sec) | Code number | Rated capacity (kg) | Number of persons | Entrance width JJ (mm) | Car internal dimensions (mm) | Internal dimensions of hoistway (mm) *1 | Internal dimensions of machine room (mm) |
|---|---|---|---|---|---|---|---|
| | | | | | | In-line arrangement | |
| | | | | | | 2-unit installation | 2-unit installation |
| | | | | | Width × Depth AA × BB | Width × Depth AH × BH | Width × Depth AM × BM |
| 6.0 | P16 | 1200 | 16 | 1000 | 1800 × 1450 | 5100 × 2300 | 5250 × 4000 |
| | P18 | 1350 | 18 | 1100 | 2000 × 1450 | 5500 × 2300 | 5550 × 4000 |
| | P21 | 1600 | 21 | 1100 | 2000 × 1700 | 5500 × 2600 | 5550 × 4250 |
| | P24 | 1800 | 24 | 1100 | 2100 × 1750 | 5700 × 2650 | 5700 × 4300 |
| | P26 | 2000 | 26 | 1100 | 2100 × 1950 | 5700 × 2850 | 5700 × 4450 |

★ All the above dimensions are calculated based on EN81-1 (1998).
★ The dimensions shown are minimum requirements, particularly in the figures of TC, OH and PD. Necessary tolerance should be separately considered for the building construction errors.
★ TC, OH, PD and reaction load are calculated according to car and hoistway dimensions on the above table. (When the counterweight is back drop.)
★ The shaft independently housing a single car is not recommended because noise increases. Please consult our local agents if the shaft of that kind is required.

Note:
*1: The dimensions BH are calculated when the counterweight is equipped without safety gear.

## Top clearance (TC) dimensions (Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | |
|---|---|---|
| | TR≦150 | 150<TR≦250 |
| 6.0 | 3200 | 3600 |

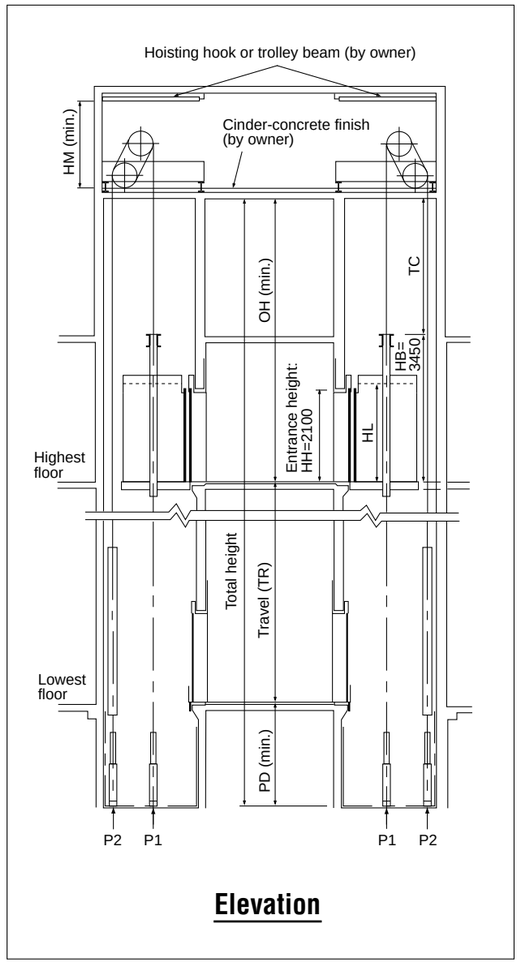
## Machine-room height (HM) (Unit: mm)

| Rated speed (m/sec) | Travel (TR) (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 6.0 | TR≦150 | 2300 | | | | |
| | 150<TR≦250 | 2300 | | | 2800 | |

## Overhead-height (OH) dimensions (Unit: mm)

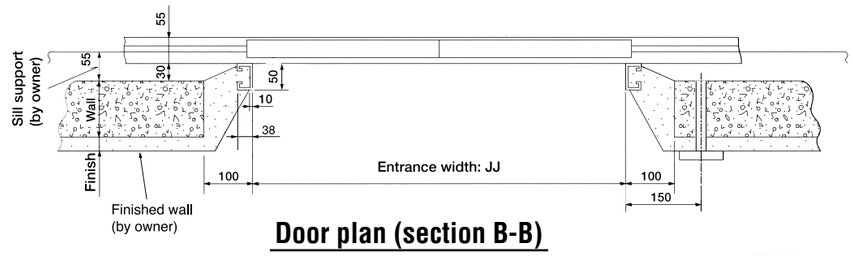
| Rated speed (m/sec) | Travel TR (m) | Rated capacity (kg) | | | | |
|---|---|---|---|---|---|---|
| | | 1200 | 1350 | 1600 | 1800 | 2000 |
| 6.0 | TR≦150 | 6650 | | | | |
| | 150<TR≦250 | 7050 | | | | |

Note: The dimensions OH are calculated when the car frame height (HB) is 3450mm.

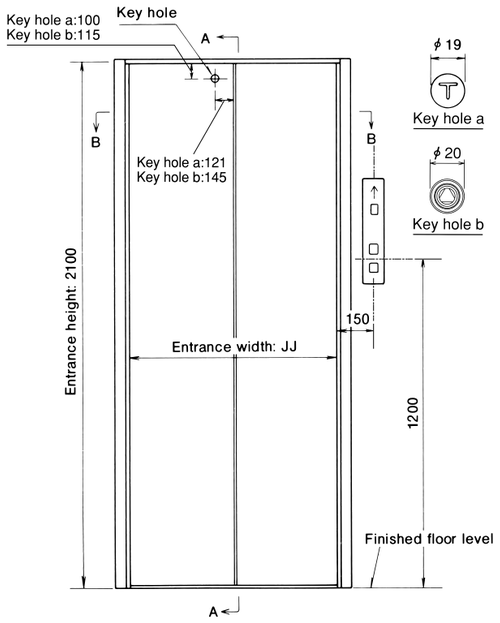



Elevation

## Type E-102 (standard)

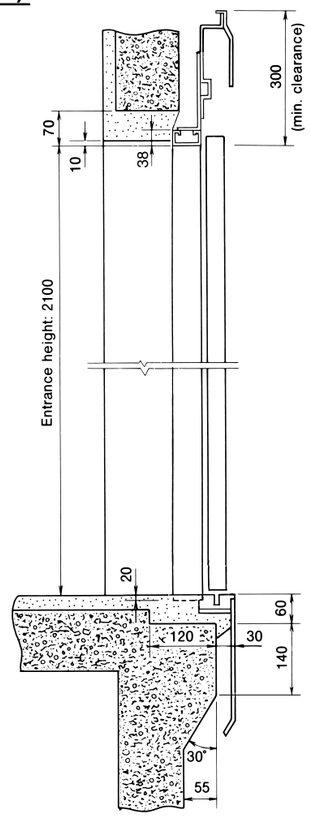



**Door plan (section B-B)**




**Hoistway entrance**



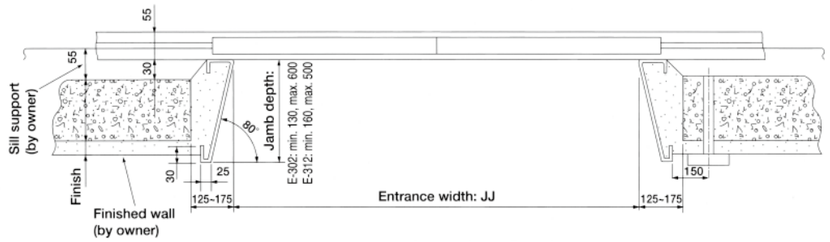

**Door elevation (section A-A)**

Building structure (by owner)

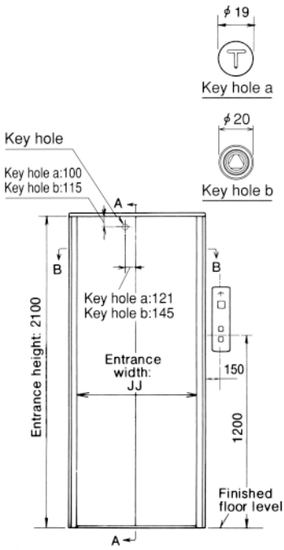
Wall and floor finishing (by owner)

Note: 1. Triangular key-hole is required under EN81-1.
2. Details in sections A-A and B-B are not for BS-476 fire rated doors.

## Type E-302, E-312 (option)

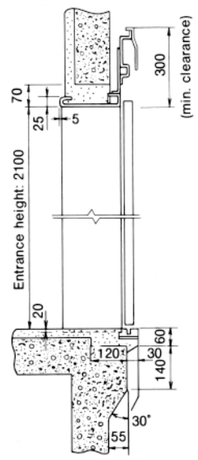



**Door plan (section B-B)**

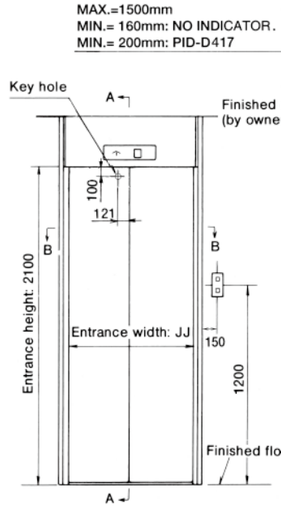



**Hoistway entrance Type E-302**

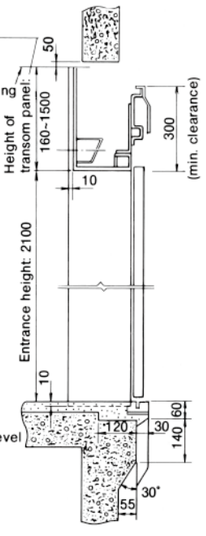



**Door elevation (section A-A)**




**Hoistway entrance Type E-312**




**Door elevation (section A-A)**

Building structure (by owner)

Wall and floor finishing (by owner)

Note: 1. Triangular key-hole is required under EN81-1.
2. Details in sections A-A and B-B are not for BS-476 fire rated doors.

## ● Power Feeder Data *1

| Speed (m/sec) | Rated load (kg) | Traction motor (kW) | Current at 400V *2 | | Capacity of power supply (kVA) | NF in M/R at 400V system (A) | Heat emission (W) |
|---|---|---|---|---|---|---|---|
| | | | FLU (A) | FLAcc (A) | | | |
| 2.0 | 750 | 15 | 27 | 52 | 16 | 75 | 2330 |
| | 900 | 15 | 31 | 56 | 18 | 75 | 2800 |
| | 1050 | 15 | 33 | 61 | 19 | 75 | 3260 |
| | 1200 | 20 | 37 | 67 | 21 | 75 | 3730 |
| | 1350 | 20 | 41 | 72 | 23 | 75 | 4190 |
| | 1600 | 20 | 47 | 82 | 26 | 75 | 4970 |
| | 1800 | 23 | 57 | 98 | 31 | 100 | 5600 |
| | 2000 | 28 | 59 | 107 | 33 | 100 | 6210 |
| 2.5 | 750 | 18 | 31 | 64 | 18 | 75 | 2910 |
| | 900 | 18 | 36 | 69 | 20 | 75 | 3490 |
| | 1050 | 18 | 39 | 75 | 21 | 75 | 4070 |
| | 1200 | 25 | 44 | 82 | 23 | 75 | 4660 |
| | 1350 | 25 | 48 | 88 | 25 | 75 | 5240 |
| | 1600 | 25 | 56 | 100 | 29 | 100 | 6210 |
| | 1800 | 28 | 67 | 121 | 34 | 100 | 7000 |
| | 2000 | 35 | 70 | 134 | 37 | 100 | 7800 |
| 3.0 | 750 | 22 | 34 | 74 | 19 | 75 | 3490 |
| | 900 | 22 | 39 | 81 | 21 | 75 | 4190 |
| | 1050 | 22 | 45 | 90 | 23 | 75 | 4890 |
| | 1200 | 30 | 50 | 98 | 25 | 100 | 5590 |
| | 1350 | 30 | 56 | 105 | 28 | 100 | 6280 |
| | 1600 | 30 | 65 | 119 | 32 | 100 | 7450 |
| | 1800 | 34 | 76 | 143 | 40 | 125 | 8400 |
| | 2000 | 42 | 81 | 163 | 42 | 125 | 9400 |
| 3.5 | 750 | 25 | 40 | 97 | 21 | 75 | 4070 |
| | 900 | 25 | 44 | 99 | 23 | 75 | 4890 |
| | 1050 | 25 | 51 | 113 | 27 | 100 | 5700 |
| | 1200 | 35 | 57 | 124 | 30 | 100 | 6520 |
| | 1350 | 35 | 63 | 131 | 33 | 100 | 7330 |
| | 1600 | 35 | 74 | 144 | 37 | 125 | 8690 |
| | 1800 | 39 | 92 | 174 | 46 | 125 | 9800 |
| | 2000 | 49 | 94 | 197 | 47 | 150 | 10860 |
| 4.0 | 750 | 29 | 44 | 110 | 23 | 75 | 4660 |
| | 900 | 29 | 49 | 112 | 26 | 100 | 5590 |
| | 1050 | 29 | 57 | 123 | 30 | 100 | 6520 |
| | 1200 | 40 | 64 | 135 | 33 | 125 | 7450 |
| | 1350 | 40 | 71 | 143 | 36 | 125 | 8380 |
| | 1600 | 40 | 83 | 165 | 41 | 150 | 9930 |
| | 1800 | 45 | 102 | 196 | 49 | 150 | 11200 |
| | 2000 | 56 | 104 | 231 | 51 | 150 | 12410 |
| 5.0 | 1200 | 42 | 80 | 196 | 41 | 125 | 9400 |
| | 1350 | 42 | 88 | 211 | 44 | 125 | 10500 |
| | 1600 | 50 | 103 | 238 | 50 | 150 | 12500 |
| | 1800 | 53 | 114 | 253 | 57 | 175 | 14000 |
| | 2000 | 58 | 126 | 274 | 62 | 200 | 15600 |
| 6.0 | 1200 | 56 | 92 | 237 | 46 | 150 | 11200 |
| | 1350 | 56 | 102 | 252 | 50 | 150 | 12600 |
| | 1600 | 56 | 120 | 284 | 59 | 175 | 14900 |
| | 1800 | 63 | 133 | 304 | 65 | 200 | 16800 |
| | 2000 | 70 | 147 | 328 | 72 | 225 | 18700 |

FLU: current during upward operation with full load at power supply voltage of 400V.
FLAcc: current while accelerating with full load at power supply voltage of 400V.

Notes:
*1: The values in the table above are for the case where power supply voltage is 400V. If the power supply voltage is within the range of 380 to 440V (except for 400V), calculate values by referring to page 16. If the power supply voltage is not within the range of 380 to 440V, please consult our local agents.
*2: If power supply voltage (E) is a value other than 400V, FLU current and FLAcc current are obtained via the following formula.
(FLU/FLAcc current (A) at E (V)) = (Current at 400V) × (400/E (V))

### Table 1

| Feeder size ($mm^2$) | Coefficient |
|---|---|
| 3.5 | 5.1 |
| 5.5 | 8.0 |
| 8 | 11.6 |
| 14 | 20.6 |
| 22 | 32.1 |
| 30 | 42.5 |
| 38 | 54.3 |
| 50 | 70.7 |
| 60 | 87.3 |
| 80 | 115 |
| 100 | 148 |
| 125 | 184 |
| 150 | 225 |
| 200 | 287 |
| 250 | 371 |
| 325 | 473 |

### Table 2

| No. of elevators on common feeder | Diversity factor | | |
|---|---|---|---|
| | For FLU | For FLAcc | |
| | | Without express zone | With express zone |
| 2 | 2.0 | 1.7 | 1.85 |
| 3 | 2.7 | 2.4 | 2.7 |
| 4 | 3.1 | 2.95 | 3.4 |
| 5 | 3.25 | 3.6 | 4.2 |
| 6 | 3.3 | 4.1 | 4.9 |
| 7 | 3.71 | 4.6 | 5.6 |
| 8 | 4.08 | 5.1 | 6.3 |
| 9 | 4.45 | 5.6 | 6.9 |
| 10 | 4.8 | 6.0 | 7.6 |

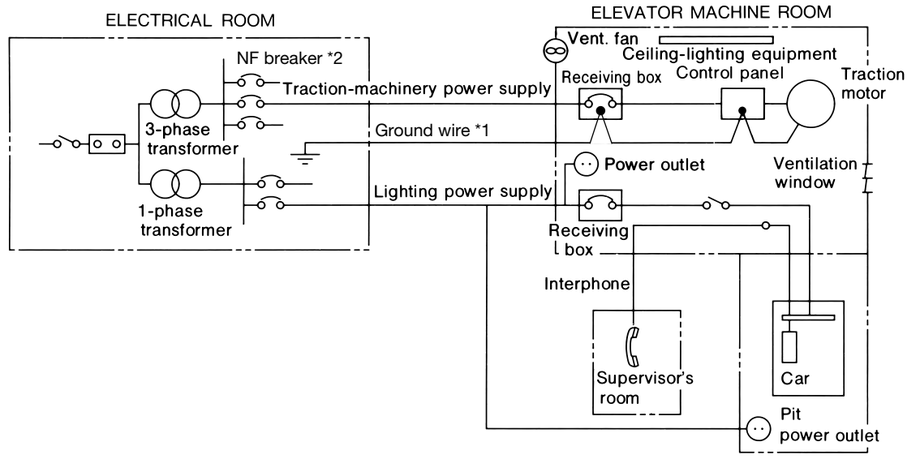
## Feeder Size Calculation

● The feeder must be able to withstand continuous flow of the following current at an ambient temperature of 40°C.
1.25 × FLU (A).....FLU ≦ 50 (A)
1.10 × FLU (A).....FLU > 50 (A)

(FLU (A): current during upward operation with full load at power supply voltage of 400V.)
The wire length for the feeder size must be calculated via the following formula.
Wire length (m) ≦ Coefficient* × E (V)/FLAcc (A)
(E: power supply voltage (V))
(FLAcc (A): current while accelerating with full load at power supply voltage of 400V)
*Refer to the table 1 for coefficients.

● When power is supplied to multiple elevators in a group through a common feeder, the capacity of the power supply transformer, the size of the feeder, and the current rating of the no-fuse (NF) breaker for one elevator are each multiplied by the corresponding diversity factor at table 2.

## ● Electrical Equipment Required for Elevator Operation




Notes:
*1: The minimum size of ground wire is determined according to the ampere rating of the NF breaker installed at the power source side.
*2: The ampere rating of the power-source NF breaker should be of one step larger than of the receiving-box NF breaker installed in the elevator machine room.

### Traction-Machinery Power Supply

It is necessary to install power-supply equipment of sufficient capacity to ensure the elevators accelerating smoothly and landing accurately.
The power supply should be kept within a voltage-fluctuation range of +5 ~ -10%, and a voltage-imbalance factor of 5%.
When selecting protective breakers on the power-supply side, be guided by voltage ratings of the no-fuse breakers supplied with the elevators.

### Power Supply for Lighting

Lighting for the elevator cars and indicators, where possible, should be supplied via a separate circuit that will not be affected by power failures elsewhere.

### Ventilation Equipment

A machine-room ventilation device having a sufficient capacity to keep the room temperature below 40°C is required.
A ventilation window should also be installed at the opposite side of ventilation fan.

### Intercom (where necessary)

This is essential to establish the communication between elevator passengers and outside in case of emergency.
The master station transceiver is usually in a location readily accessible to the supervisor, in the central supervisor's room or elevator lobby. The wiring work between the master station and the elevator machine room is not included in the elevator contract.
To facilitate piping and wiring, it is desirable to decide on the position of the master station at the earliest stage of building design.

### Lighting Equipment

The machine room should be fitted with good lighting for maintenance work. The light switch should be positioned close to the machine-room entrance.

### Inspection Power Outlets

These should be installed in the machine room and pit for use during inspection and maintenance.





### Work Not Included in Elevator Contract

The following items are excluded from Mitsubishi Electric's elevator installation work, and are therefore the responsibility of the building owner or general contractor:

- Construction of the elevator machine room with proper beams and slabs, equipped with a lock, complete with illumination, ventilation and waterproofing.
- Access to the elevator machine room sufficient to allow passage of the control panel and traction machine.
- Architectural finishing of the machine room floor, and the walls and floors in the vicinity of the entrance hall after installation has been completed.
- Construction of an illuminated, ventilated and waterproofed elevator hoistway.
- A ladder to the elevator pit.
- The provision of cutting the necessary openings and joists.
- Separate beams, when the hoistway dimensions markedly exceed the specifications, and intermediate beams when two or more elevators are installed.
- All other work related to building construction.
- The machine room power-receiving panel and the electrical wiring for illumination, plus the electrical wiring from the electrical room to the power-receiving panel.
- 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, etc.
- 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 Mitsubishi Electric's elevator controller, when supplied by the building owner or general contractor.

* Work responsibilities in installation and construction shall be determined according to local laws. Please consult our local agents for details.

### Elevator Site Requirements

- The temperature of the machine room and elevator hoistway shall be below 40℃.
- 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. The machine room and the elevator hoistway shall be finished with mortar or other materials so as to prevent concrete dust.
  c. Prevention shall be provided against icing and condensation occurring due to a rapid drop in the temperature in the machine room and elevator hoistway.
- 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.

ISO 9001 BUREAU VERITAS Certification

ISO 14001 JACO EC98J2017 UKAS ENVIRONMENTAL MANAGEMENT 051

Mitsubishi Elevator Inazawa Works has acquired ISO 9001 certification by the International Standards Organization (ISO) based on a review of quality management.
The company has also acquired environmental management system standard ISO 14001 certification.


for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

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Visit our website at:
http://www.mitsubishielectric.com/elevator/

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

New publication effective Mar. 2014.
Specifications are subject to change without notice.



C-CL1-4-C9343-A INA-1403 Printed in Japan (MDOC)