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.

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

Elevator Halls and Hoistways
1. Finishing of walls and floors of elevator halls after installation of elevator hall fittings.
2. Hoistway repair work.
3. Installing intermediate beams (where existing ones cannot be used).
4. Drilling holes for jambs and transom panels, hall indicators, hall buttons, etc., in the entrance halls on each floor (where existing ones cannot be used).
5. Installing steel backing plates for the jambs and transom panels, hall buttons, hall indicators, etc., in the entrance halls on each floor where steel-frame construction is used (where existing ones cannot be used).
6. Installing fasteners for the mounting of rail brackets on floors where steel-frame construction is used (where existing ones cannot be used).

Machine Rooms
1. Removing the machine-room floor (breaking up cinder concrete).
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3. Drilling holes in the machine-room floor.
4. Providing a temporary opening to bring in machinery and perform restoration work.
5. Access to the elevator machine room sufficient to allow passage for transporting machinery from outside the building.

Temporary Installation Work
1. Disposing of removed parts, cleaning up and disposing of broken glass and scrap.
2. Providing a suitable, locked space for storage of removed or to-be-installed elevator parts and tools.
3. Supplying electric power for the work and lighting.

Cautions Regarding Installation Work
1. Temporary hall enclosures should be provided.
2. A certain amount of vibration and noise is inevitable during the installation period.
3. Flammable materials are used during the installation period.
4. Security guards should be deployed throughout the installation period.

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

Work Not Included in Elevator Contract
The following items are excluded from Mitsubishi Electric's elevator modernization work, and are therefore the responsibility of the building owner or general contractor.

MODERNIZATION OF PASSENGER ELEVATOR CONTROL SYSTEM

ELEMOION
More Effective, Cost-efficient Operation for Years to Come

Even with proper maintenance and normal operation, elevator components progressively deteriorate over a long period of use. To ensure passenger comfort and overall safety, elevator system modernization is required. When that time comes, give Mitsubishi Electric a call. We're certain you'll be glad you did.

That's the difference between maintenance and modernization

Unlike maintaining current functionality and operation through maintenance, system modernization provides improved comfort and operation utilizing the latest functions and control equipment.

get it all with ELEMOTION
Optimum modernization
- Upgrade elevator control systems and signal fixtures to enhance performance and appearance

1. Gearless traction machine with PM motor and double brakes*1
   (PM: permanent magnet)

   This 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 CO2 emissions.

   Furthermore, the double brakes, which work independently, ensure safety.

2. Control panel with VVVF inverter control
   (VVVF: variable voltage, variable frequency)

   Energy savings of up to 60%*2

   Variable voltage, variable frequency (VVVF) inverter control not only delivers smooth control of the traction machine, its regenerative braking system also conserves a significant amount of energy. Used alongside the gearless traction machine with PM motor, it ensures that elevators operate at optimal power efficiency, using up to 60%*1 or less power than AC-2 control.

   Smoother ride and enhanced landing precision

   A quality ride with smoother acceleration and minimal noise is delivered. The elevator landing is precise.

3. Door motor with advanced door control

   The door motor and VVVF inverter ensure smoother and quieter door opening and closing, thereby enhancing passenger safety and product reliability.

   Optional

   Enhancing passenger safety
   Multi-beam Door Sensor*1

   Multiple infrared-light beams cover some 1800 mm in height of the doors to detect passengers or objects as the doors close.

4. Aesthetic signal fixtures

   The new signal fixtures add to the building’s sophistication.

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*1 Depending on its condition, the traction machine may remain for reuse, or only the motor may be replaced.

*2: The reduction ratio can vary depending on the type of existing elevator.

Note:
*1: This may not be applicable to the existing elevators. Please consult our local agent for details.
Features that optimize elevators and fulfill specific needs

Safety

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.

Efficiency

Destination Oriented Allocation System (DOAS) (Applicable to ∑AI-2200C only as an option)

Enhancing usability for passengers at halls

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.

Comfort

Apartment Service (MES)

(Optional) (Not applicable to 1C-2BC and ∑AI-2200C)

In residential buildings, to reduce passenger waiting time, the floor where elevators wait on standby can be set according to the time zone; for instance, an intermediate floor during morning down-peak and a lobby floor during evening up-peak hours.

MelEye (WP-W)

Mitsubishi Elevators & Escalators Monitoring and Control System (optional)

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.

Emergency operation

Mitsubishi Emergency Landing Device (MELD) (optional)

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 20 meters. Please consult our local agents regarding rechargeable batteries, etc.)

Operation by Emergency Power Source- Automatic/Manual (OEPS) (optional)

Upon power failure, predetermined car(s) use 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, predetermined car(s) resume normal operation.

Earthquake Emergency Return (EER-P/EER-S) (optional)

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.

Energy-saving

Car Light/Fan Shut Off—Automatic (CLO-A/ CFO-A)

(Optional)

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

Another convenient function for residential buildings; Going-out Service (GOS)

When passengers press the down button in the hall of the floor they live on, the car that answers the call automatically travels down to a predetermined floor without any buttons in the car being pressed. Note that the Going-out Service is not applicable to some elevators.
**Car Signal Fixtures**

Replace signal fixtures and make elevators look as good as new.

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**Car operating panel in front return panel**

**Buttons accented with LED halo illumination**

Tactile and flat buttons (stainless-steel with non-directional hairline-finish) are available in three illumination colors: yellow-orange, white and blue.

- **Standard**
  - Tactile button: 1
  - Flat button: 2
- **Optional**
  - Tactile button: 3
  - Flat button: 4

Selecting button type

Input the number corresponding to the button type as the fourth digit (shown as # in this brochure) in the car operating panel type (CBV#-XXXX) and hall button type (PIV#-XXXX or HBV#-XXXX).

Note:

- Tactile and flat buttons (stainless-steel with non-directional hairline-finish) are available in three illumination colors: yellow-orange, white and blue.
- Select the button type and enter the number in the space shown as #.
- Standard Segment LED indicators cannot display some letters of the alphabet. Please consult our local agents for details.
- This car operating panel is applicable when the number of floors is 22 or less.
- The standard car operating panel in this image has no service cabinet. A similar car operating panel with service cabinet is available as an option.
**Hall Signal Fixtures**

Replace signal fixtures and make elevators look as good as new

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**Hall position indicators and buttons**

- **Standard**
  - PIV1-A720

- **Optional**
  - PIV1-A720
  - Metal-like resin faceplate
  - HLH-A15
  - Metal-like resin faceplate

**Hall position indicators (Optional)**

- Segment LED indicator
  - PIV-D417

**Hall buttons (Optional)**

- Segment LED indicator
  - PIV-D417
  - Metal-like resin faceplate

**Hall position indicator with lantern (Optional)**

- Segment LED indicator
  - PIE-B47

**Hall lanterns (Optional)**

- HBV-C710
- Metal-like resin faceplate

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*1 Segment LED indicators cannot display some letters of the alphabet. Please consult our local agent for details.

*2 Please select a button type on page 8, and write the number in the space shown in

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## Features

### Operational and Service Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Call Canceling (CCC)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Car Fan Shut Off — Automatic (CCF-A)</td>
<td>If there are no calls for a specified period, the car ventilation fan automatically turns off to conserve energy.</td>
<td>1</td>
</tr>
<tr>
<td>Car Light Shut Off — Automatic (CLD-A)</td>
<td>If there are no calls for a specified period, the car lighting automatically turns off to conserve energy.</td>
<td>1</td>
</tr>
<tr>
<td>Continuity of Service (COS)</td>
<td>A car which is experiencing a trouble is automatically withdrawn from group control operation to maintain overall group performance.</td>
<td>1</td>
</tr>
<tr>
<td>Backup Operation for Group Control Microprocessor (GC BK)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Independent Service (IND)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Next Landing (NKL)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Overload Holding Stop (OLH)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Safe Landing (SFL)</td>
<td>A fully-loaded car bypasses hall calls in order to maintain maximum operational efficiency.</td>
<td>1</td>
</tr>
<tr>
<td>Automatic Bypass (ABP)</td>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Attendant Service (AS)</td>
<td>When 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 moves to the nearest floor at a low speed and the doors open.</td>
<td>1</td>
</tr>
<tr>
<td>False Call Canceling</td>
<td>If a wrong car button is pressed, it can be canceled by quickly pressing the same button again twice.</td>
<td>2</td>
</tr>
<tr>
<td>False Call Canceling — Car Button Type (FCC-P)</td>
<td>If a wrong car button is pressed, it can be canceled by quickly pressing the same button again twice.</td>
<td>2</td>
</tr>
<tr>
<td>Automatic Hall Call Registration (FISAT)</td>
<td>When one car cannot carry all waiting passengers because it is full, another car will automatically be assigned for the remaining passengers.</td>
<td>1</td>
</tr>
<tr>
<td>Logical Out Service (GOS)</td>
<td>When passengers press the down button in the hall of the floor they live on, the car that answers the call automatically travels down to a predetermined floor without any buttons in the car being pressed. The GOS is not applicable to some elevators. Please consult our local agents for details.</td>
<td>1</td>
</tr>
<tr>
<td>Out-of-service by Hall Key Switch (HOS/HOS-T)</td>
<td>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.</td>
<td>3</td>
</tr>
<tr>
<td>Apartment Service (MES)</td>
<td>In residential buildings, to reduce passenger waiting time, the floor where elevators wait on standby can be set according to the time zone, for instance, an intermediate floor during morning down-peak and a lobby floor during evening up-peak hours. (The Apartment Service is not applicable to some elevators. Please consult our local agents for details.)</td>
<td>4</td>
</tr>
<tr>
<td>Non-service to Specific Floors — Car Button Type (NS-CB)</td>
<td>To enhance security, service to specific floors can be disabled using the car operating panel. This function is automatically deactivated during emergency operation.</td>
<td>5</td>
</tr>
<tr>
<td>Non-service to Specific Floors — Switch/Timer Type (NS/NT-S)</td>
<td>To enhance security, service to specific floors can be disabled using a manual or timer switch. This function is automatically deactivated during emergency operation.</td>
<td>5</td>
</tr>
<tr>
<td>Regenerative Converter (PCNV)</td>
<td>For energy conservation, power regenerated by a traction machine can be used by other electrical systems in the building. (The Regenerative Converter is not applicable to some elevators. Please consult our local agents for details.)</td>
<td>6</td>
</tr>
<tr>
<td>Out-of-service — Remote (RCS)</td>
<td>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.</td>
<td>7</td>
</tr>
<tr>
<td>Return Operation (RET)</td>
<td>Using a key switch on the supervisory panel, a car can be withdrawn from group control operation and called to a specified floor. The call will park on that floor with the doors open, and not accept any calls until independent operations begin.</td>
<td>8</td>
</tr>
<tr>
<td>Secret Call Service (SCS-B)</td>
<td>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.</td>
<td>9</td>
</tr>
</tbody>
</table>

### Door Operation Features

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Door Load Detector (DDL)</td>
<td>When excessive door load has been detected while opening or closing, the doors immediately reverse.</td>
<td>10</td>
</tr>
<tr>
<td>Door Sensor Self-diagnosis (DDDS)</td>
<td>Failure of non-contact door sensors is checked automatically, and if a problem is diagnosed, the closing time is delayed and the closing speed is reduced to maintain elevator service and ensure passenger safety.</td>
<td>11</td>
</tr>
<tr>
<td>Automatic Door-open Time Adjustment (DOT)</td>
<td>The time doors are open is automatically adjusted depending on whether the stop was called from the hall or the car, to allow smooth boarding of passengers or loading of baggage.</td>
<td>12</td>
</tr>
<tr>
<td>Automatic Door Speed Control (DSAC)</td>
<td>Door load on each floor, which can depend on the type of hall door, is monitored to adjust the door speed, thereby making the door speed consistent throughout all floors. (Cannot be used with some doors.)</td>
<td>13</td>
</tr>
<tr>
<td>Door Nudging Feature</td>
<td>With Buzzer (NDG)</td>
<td>A buzzer sounds and the doors slowly close when they have remained open for longer than the preset period. With AAN-B or AAN-G, a beep and voice guidance sound instead of the buzzer.</td>
</tr>
<tr>
<td>Reopen with Hall Button (ROHB)</td>
<td>Closing doors can be reopened by pressing the hall button corresponding to the traveling direction of the car.</td>
<td>15</td>
</tr>
<tr>
<td>Extended Door-open Button (DOD-TB)</td>
<td>When the button inside a car is pressed, the doors remain open longer to allow loading and unloading of baggage, a stretcher, etc.</td>
<td>16</td>
</tr>
<tr>
<td>Electronic Doorman (EDM)</td>
<td>Door open time is minimized using the Safety Ray (SR) or Multi-beam Door Sensors that detects passengers boarding or existing.</td>
<td>17</td>
</tr>
<tr>
<td>Multi-beam Door Sensor</td>
<td>Multiple infrared-light beams cover some 1800 mm in height of the doors to detect passengers or objects as the doors close.</td>
<td>18</td>
</tr>
</tbody>
</table>

### Signal and Display Features

<table>
<thead>
<tr>
<th>Feature</th>
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</tr>
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<tbody>
<tr>
<td>Basic Announcement (AAN-B)</td>
<td>A synthetic voice (and/or buzzer) alerts passengers inside a car that elevator operation has been temporarily interrupted by overloading or a similar cause. (Voice available only in English.)</td>
<td>19</td>
</tr>
<tr>
<td>Car Arrival Chime</td>
<td>Car (AEC-C)</td>
<td>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.)</td>
</tr>
<tr>
<td>Hall (AECH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flashing Hall Lantern (FHL)</td>
<td>A hall lantern, which corresponds to a car’s service direction, flashes to indicate that the car will soon arrive.</td>
<td>21</td>
</tr>
<tr>
<td>Voice Guidance System (AAN-G)</td>
<td>Information on elevator service such as the current floor or service direction is given to the passengers inside a car. (Voice guidance available only in English.)</td>
<td>22</td>
</tr>
<tr>
<td>Sonic Car Button — Click Type (ACB)</td>
<td>A click-type car button which emits electronic beep sounds when pressed to indicate that the car has been registered.</td>
<td>23</td>
</tr>
<tr>
<td>Immediate Prediction Indication (API)</td>
<td>When a passenger has pressed 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.</td>
<td>24</td>
</tr>
<tr>
<td>Car LCD Position Indicator (CDI-S)</td>
<td>This 5-inch LCD for car operating panels shows the date and time, car position, travel direction and elevator status messages.</td>
<td>25</td>
</tr>
<tr>
<td>Intercommunication System (ITP)</td>
<td>A system which allows communication between passengers inside a car and the building personnel.</td>
<td>26</td>
</tr>
<tr>
<td>Second Car Prediction (TCP)</td>
<td>When a hall is crowded to the extent that one car cannot accommodate all waiting passengers, a hall lantern will light up to indicate the next car to serve the hall.</td>
<td>27</td>
</tr>
</tbody>
</table>

Notes:
- 1C-2C (1-2-car group control system) — Optional
- 3C to 4C — Standard
- 3C to 5C — Optional
- 3C to 8C — Optional
- 3 to 4-car group control system — Optional
- 3 to 8-car group control system — Optional
- 1: Standard          2: Optional          3: Optional
- #1: When the DOAS is applied, the Multi-beam Door Sensor feature is required.
- #2: Standard feature for hospital bed elevator.
- #3: When the DOAS is applied, the Multi-beam Door Sensor feature is required.
Features

EMERGENCY OPERATIONS AND FEATURES

- **Emergency Lightening**
- **Earthquake Emergency Return (EER-EER-S)**
- **Firefighters’ Emergency Operation (FEO)**
- **Fire Emergency Return (FER)**
- **Mitsubishi Emergency Landing Device (HLEPD)**
- **Operation by Emergency Power Source — Automatic/Manual (DEPS)**
- **Optional Supervisory Panel (WP)**
- **MelEye (WP-W)**

**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.

**Dynamic Rule-set Optimizer (IDO)**
- 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 — Strategic Overall Spotting (SOHS)**
- 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.

**Distinction of Traffic Flow with Neural Networks (NFN)**
- Traffic flows in a building are constantly monitored using neural network technology, and the optimum operational pattern, such as the Lunchtime Service (LTS) or Up Peak Service (UPS), is selected or canceled accordingly at the appropriate time.

**Strategic Overall Spotting (SOHS)**
- To reduce passenger waiting time, cars which have finished service are automatically directed to locations where they can respond to predicted hall calls as quickly as possible.

**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.

**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 future calls.

**Expert System and Fuzzy Logic**
- Artificial expert knowledge programmed using “expert system” and “fuzzy logic” is applied to select the ideal operational rule which maximizes the efficiency of group control operations.

**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.

**Bank-separation Operation (BSO)**
- Half buttons and the cars called by each button are divided into several groups for independent group control operation to serve special needs or different floors.

**Congested-floor Service (CFI)**
- 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.

**Closest-car Priority Service (CPS)**
- 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.)
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6. Installing fasteners for the mounting of rail brackets on floors where steel-frame construction is used (where existing ones cannot be used).

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1. Removing the machine-room floor (breaking up cinder concrete).
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5. Access to the elevator machine room sufficient to allow passage for transporting machinery from outside the building.

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