High-Speed Elevators

WITH VARIABLE VOLTAGE & VARIABLE FREQUENCY CONTROL
Fujitec provides high-speed, high quality elevators with leading-edge technology in AC motor VVVF (Variable Voltage and Variable Frequency) control.
Traction Machine

AC Gearless Machine

High Speed
This system is designed for high-speed elevators with speeds up to 750m/min for super high-rises.

High Efficiency
Development of an inverter which optimally controls speeds and an energy-efficient motor matched to the inverter has reduced power consumption by approximately 10% and elevator power supply capacity by approximately 30% compared with Thyristor-Leonard systems.

AC Helical Geared Machine

Higher Efficiency Gear
The Helical design is one of the most efficient types of power transmission gear. Application of Fujitec’s highly accurate machining technology has achieved a high-speed range of AC geared machine up to 240m/min, comparable to the speed conventionally attained by gearless drives.

Compactness
This higher efficiency Helical Geared machine has reduced energy-consumption by approximately 15% compared with worm gears.

Distributed Control System Multi Brain Control Elevator

Fujitec inverter-controlled high-speed elevators use distributed microcomputers to share elevator control functions. Establishing a system controlled with multiple brains has further enhanced our elevator reliability, safety and performance.

High Reliability Ensured by the Distributed Control System

Precise and Rapid Control
In the distributed control system, microcomputers are provided in the car unit, car operating board, and hall buttons. Each of the computers is intensively provided with data necessary for the functions, and thus, precise and rapid control has been made possible.

Improved Reliability
With the latest electronic parts mounted in the control panel, reliability has been further enhanced. In addition, a serial transmission system is used in the transmission path through which microcomputers mutually exchange data.

Diagnostic Function
The system is provided with diagnostic functions to detect abnormality in the transmission path. Microcomputers themselves are provided with self-diagnostic and mutual monitoring capabilities.
With VVVF Inverter Control
High Performance is Achieved.

While varying voltage and frequency freely, the inverter optimally controls motor speeds. With an inverter employed in elevator drives, high performance and high efficiency of the control system have been ensured.

Energy and Space are Minimized to the Limit.

High Performance by Vector Control
We have established high performance vector control technology which controls magnetic flux and torque of an AC motor independently. Since optimal torque control is available, a vibration free smooth ride quality has been ensured.

High Efficiency
A decrease in power factor during low-speed operation has been rectified by providing a continuous supply of an adequate amount of power to the motor. To make this possible, the elevator power supply equipment capacity has been reduced by approximately 30% more than a Thyristor-Leonard system. At the same time, standby power capacity for power failure has also been substantially reduced.

Reduced Power Consumption
*The HVF control system adopts a power transistor in the converter to control while maintaining power current in the sine wave state, which helps to minimize harmonics. Power consumption has also been reduced approximately 10% more than a Thyristor-Leonard system.

*HVF control system is our standard control system for large capacity models. For small capacity models, LVF control system, which uses diode in converter, is our standard.

Microcomputer functions are further enhanced. Furthermore, speed control and operation management are conducted to a perfect degree. As a result, comfortable ride, accurate leveling, and efficient service are attained.

Digital Control Produces High Accuracy

Precise Speed Control
Speed control, including vector control, is performed by means of a high-speed digital circuit. As a result, elevator control performance and response performance have been remarkably enhanced. At the same time, adoption of a high-resolution sensor as a high-speed detector has enabled precise speed control in a range from micro crawling speed to high speed.

Accurate Leveling
Position control is performed continuously in response to accurate position signals obtained by a high-resolution sensor. Thus, higher leveling accuracy has been achieved. Furthermore, elevator operating time has been further reduced.
Group Supervisory Control System
FLEX-N Series Neuros

Neuro System Delivers the Optimal Group Control to Meet Complicated Traffic Demands for Large-scale and "Intelligent" Building

Automatic Network Modification
The neuro-computer’s high-speed processing uses a sophisticated 32-bit CPU. The system enables to deal with a change in the building situation automatically and provide the optimal elevator service according to Fujitec’s unique Neural Net operation algorithm.

High Accurate Advance Notice of Car Arrival
The neuro-computer, which is equipped with a self-learning function, automatically modifies the group control logic rules to assign the optimal elevators all the time even though it encounters an unexpected situation. This enables to provide substantially improved accuracy of advance notice over conventional fuzzy control system.

FLEX-N100
FLEX-N100 is well-suited to small-size buildings. The supervisory computer is equipped with a CPU that has excellent processing capability and reliability.

FLEX-N200
FLEX-N200 is best suited for mid-size buildings. It consists of a sophisticated CPU-mounted fuzzy computer and two supervisory computers.

FLEX-N300
FLEX-N300 is suited to large-scale buildings. The GSC system consists of a neuro-computer, a fuzzy (inference logic) computer, and two supervisory computers.

LAN and WAN are more and more widely used in versatile forms toward the highly information-oriented society in the 21st century. An elevator network monitoring system is optimal in intelligent buildings with high information network functions.

Elevator Operating Status Displaying Function
Various information on elevator operation, including car position, traveling direction, door status, and call occurrence status can be graphically displayed.

Control Command Function
Control commands such as service floor disconnect, switching of operation modes (including up-peak and down-peak operations), VIP operation and parking operation can be registered from a terminal.

Scheduling for Control Command
Various control commands can be scheduled for execution at a preset time. They can also be scheduled for regular execution at preset days and times of each week.

Message Change Function on Information Display (optional)
If the in-car information display is installed, displayed messages can be modified from a PC terminal in the office.

Elevator Operation Analysis Function
The system comes with a function equivalent to our conventional elevator traffic analyzer, which can be used for diagnosis of elevator operation during maintenance.
Fujitec's high-speed elevators are in full service worldwide.

More and more buildings go high-rise within a limited urban space. Matched with this trend, elevators with larger capacity and more high speed are sought as an important transportation system in buildings. As a pioneer in the development of leading-edge high-speed elevators, Fujitec has already installed a large number of high-speed elevators in the world's high-profile skyscrapers. The success strongly supports Fujitec’s excellent high-speed elevator technology.
**List of Specifications**

**FUNCTION WISE**

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| **Safety Functions**| Door Safety Return                                          | WAVIC-S: (Earthquake Rescue Operation)        |
|                     | Open Door Warning                                           | WAVIC-P: (P-Wave Seismic Detection Operation)  |
|                     | Rescue Operation To The Nearest Landing                     | LANDIC: (Battery Power Automatic Landing Operation) |
|                     | Door Opening Failure Rescue Operation                      | Photoelectric Type Door Sensor                |
|                     | Overload Weighing Device                                   | Multiple Beams Door Sensor                    |
|                     | Two-Way Intercom                                           | DOAMIC: (Intra-Red Door Sensor)               |
|                     | Emergency Light (With Self Charging and Discharging)       | Standby Power Operation                       |

| **Service Functions**| Load Bypass (Available for 2 or More Cars)                  | Every Floor Stopping Operation                |
|                     | Automatic Door Dwell Time Control                           | VONIC: (Automatic Voice Announcement System)  |
|                     | Behind Car Call Cancellation                                | Car Arrival Chime                            |
|                     | Automatic Return To Main Floor (Available for 2 or More Cars)| BGM Speaker                                 |
|                     | Nuisance Call Cancellation                                  | Door Nudging                                 |
|                     | Car Call Cancellation                                      | Door Open Hold Button                        |
|                     | Automatic Fan and Light Control                             | Up & Down Peak Operation (Available for 2 or More Cars) |
|                     | DCL-33 Door Operator (Standard Type)                        | Parking Switch                               |
|                     |                                                               | Timer Controlled Parking Operation            |
|                     |                                                               | Car Pre Registration On Lobby Panel (Dispatching Floor Only) |
|                     |                                                               | HSA Door Operator (High-speed Type)          |
|                     |                                                               | Hall Lantern                                 |
|                     |                                                               | In-Car Information Display                   |
|                     |                                                               | Hall Information Display                     |
|                     |                                                               | AUVIS: (Elevator Multi-Information AV System) |

| **Security Functions**| Timer Controlled Floor Lockout                              |                                |
|                     | Car Call Button Coded Security Floor Lockout Control        |                                |
|                     | In-Car Security Monitoring System (CCTV)                    |                                |
|                     | VIP Operation                                               |                                |
|                     | Elevator Network Monitoring System                          |                                |
|                     | Interface with BAS System                                  |                                |

**Standard Specification**

**OPERATION SYSTEM**

**Selective Collective Automatic Operation**

A number of Up & Down hall calls and car calls can be uniformly registered. The elevator runs its travel corresponding to calls registered in a single travel direction.

**SAFETY FUNCTIONS**

**Door Safety Return**

The door operation will be reversed if foreign material, such as a pebble or trash gets clogged into the door sill. The doors will repeatedly open and close trying to remove the obstructing materials.

**Open Door Warning**

A warning buzzer sounds if a passenger tries to forcibly open the elevator doors while the car is running.

**Rescue Operation to The Nearest Landing**

If the elevator stops between floors, the elevator confirms the safety circuit and then automatically moves slowly to the nearest landing and opens the doors.

**Door Opening Failure Rescue Operation**

When an elevator arrives at a landing and cannot open the doors due to a pebble jammed into the door sill, the elevator will proceed to the next landing and open the doors.

**Overload Weighing Device**

When a car is loaded beyond its rated capacity, the elevator does not start, and sounds the buzzer with doors open.

**SERVICE FUNCTIONS**

**Load Bypass**

When an elevator is loaded close to capacity, it will bypass hall calls. The registered hall calls will be assigned to other elevators. (Available for 2 or more Cars)

**Automatic Door Dwell Time Control**

A microcomputer automatically improves operation efficiency as it adjusts the “door open dwell time” depending on the hall and car call’s registration situation.

**Behind Car Call Cancellation**

Car calls for a floor opposite to the direction in which the car is running will not be registered to prevent nuisance attempts.

**Automatic Return to Main Floor**

The elevator will return to the pre-set main floor to stand by if car calls are not registered. (Available for 2 or more Cars)

**Two-Way Intercom**

Intercom is provided in car, machine room, security room, and other places (option) and is used for communications in case of emergency or during maintenance of elevator.

**Emergency Light (With Self Charging and Discharging)**

When the power for car lights is cut off due to the power failure, etc., emergency light in car is lit immediately for passengers’ safety.

**Nuisance Call Cancellation**

If an extraordinary number of car calls are registered compared to an in-car load, all registered car calls are automatically cancelled.

**Automatic Fan and Light Control**

During off-peak operation hours, the ventilating fan and lights automatically shut off resulting in energy savings.

**VVVF-Door Operator**

This door operator is of the latest AC-Inverter control developed for the purpose of space savings and stable operation.
SAFETY FUNCTIONS

WAVIC-S (Earthquake Rescue Operation)
In the event of an earthquake, the seismic sensor will detect a seismic wave and will put the elevator into emergency operation sending it to the nearest landing.

LANDIC (Battery Powered Automatic Landing Operation)
There is no need to worry that passengers could be trapped in the car if it should stop between floors due to an unexpected power failure. With LANDIC, a compact battery powered control system operates the car to the nearest landing.

Photoelectric Type Door Sensor
When the doors are closing at a landing, the doors automatically reopen upon the interruption of the photo beam by body or hand.

Multiple Beams Door Sensor
Infra-red beams will run the full opening height like a beam curtain. If any of the beams is interrupted, the closing doors will stop and re-open.

SERVICE FUNCTIONS

Every Floor Stopping Operation
When a car call is registered, elevator stops at each floor and opens and closes door until it reaches the target floor.

VONIC
By synthesised voice, automatic announcement system informs the passengers of the car direction, floor arrival, door opening and closing actions, emergency instructions, etc.

Car Arrival Chime
A light electronic chime will sound with the arrival of the car.

BGM Speaker
Speakers for BGM or public announcements can be installed in the cab.

Door Nudging
When the doors are held open beyond a pre-set period of time, the doors will slowly start closing while sounding a warning buzzer.

DOANIC (Infra-Red Door Sensor)
When passengers’ hands are full of goods or the entrance lobby area is crowded, this device enables passengers to get in and out of the car with ease. The sensor detects a change in the heat energy around the entrance lobby and the door closing function is controlled.

Standby Power Operation
If a power failure occurs, the elevators will return to an escape floor using standby power and will be held there on standby.

Fire Operation
In the event of a fire, the elevator is automatically sent, non-stop, to an escape floor and then shuts down operation.

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FUNCTIONS

Display:
Doors will automatically close after a predetermined time has passed.

Detecting of Secondary-Wave
VManual Setting

EMER. OPERATION

SLOW DOWN

Yes

Door will not close due to the presence of a pedestrian.

Door Open Hold Button
A press of the door’s “open hold” button on the car operating board allows the doors to be held in the open position for a predetermined time.

Up & Down Peak Operation
During the up-peak and down-peak traffic time periods, the plural cars are pre-assigned to lower dispatching floors or predetermined upper floors to enhance handling capacity with more efficient service. (Available for 2 or more Cars)

PARKING SWITCH
The switch puts the elevator out of service during nights and holidays.

Optional Specification (Additional Charge)

OPERATION SYSTEM

FLEX-N100 (For 2 or 3 Car Group Control)
FLEX-N100 system provides effective plural elevator operations. When a hall call is registered, the system selects an elevator which can respond to the call in the shortest amount of time.

FLEX-N200 (For 3 or 4 Car Group Control)
FLEX-N200 system provides efficient group control utilizing fuzzy inference logic and the ingenuity of a GSC expert. The “learning function” and “knowledge base” allows the system to learn and store in-building traffic patterns by time period.

FLEX-N300 “Neuro” (For 4 or more Car Group Control)
FLEX-N300 “Neuro” system enables a high level efficiency group control using the neuro-computer. This group control system is designed to work like the human brain functions. It has the self-learning ability to discern varying traffic conditions and efficiently controls a group of 4 or more elevators by making a proper judgement on call assignments.

Independent Operation
A specified car is separated from the group and is singly operated responding only to car calls. The operation is started with an external switch.
The ISO 9000 series is a set of international standards for quality assurance which have been embraced worldwide.

Fujitec Japan realized ISO 9001 certification in March 1993. Following this achievement, Fujitec Hong Kong, Fujitec Singapore, Fujitec UK, Fujitec Korea, Fujitec Taiwan, and Huasheng Fujitec (in China) have received ISO 9001 certification, and Fujitec Egypt has received ISO 9002 certification.

Furthermore, Fujitec Japan and Fujitec Singapore have achieved ISO 14001 certification for meeting Environmental Management System Standards.

**FUJITEC'S GLOBAL OPERATION**

Fujitec has plants in Japan, Hong Kong, Singapore, Indonesia, Taiwan, Korea, China, Germany and the USA. Our network of elevator and escalator manufacturing facilities covers the world.

It should be noted that each of our plants adheres to the world’s highest quality control of products. This means our customers, wherever they are, can rely upon our quality and performance.

Elevating Ahead of Its Time

Reliable Maintenance

Successful Operation

Fujitec has been positively engaged in global operations since early stage of its development. Up to the present, a great number of Fujitec installations have been successfully operating around the world.

Reliable Service

Our policy is to offer a reliable after-sale service, wherever our installations may be, including quick actions in case of emergencies. Also preventive routine inspections and timely repair are provided to ensure longer service life of our installations.