

Case	Application of Delta's VFD Series AC Motor Drive in Elevator System				
Issued by	Solution Center	Date	May, 2009	Pages	3
Applicable to	Delta VFD-VE, VFD-VL, VFD-M-D, VFD-E and VFD-M series AC Motor Drive, DVP series PLC				

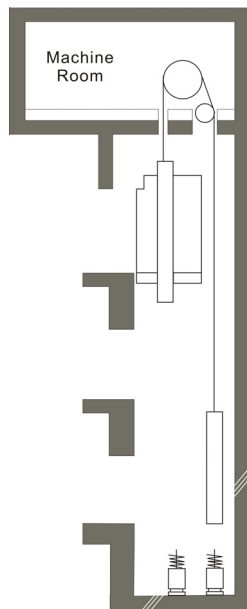
With the increasing importance of the elevator in the real estate, the development of the real estate has significant impact on the elevator market. A well-control elevator brings people/freight not only a comfortable and safety ride and also fast speed to destination.

Classification of elevators

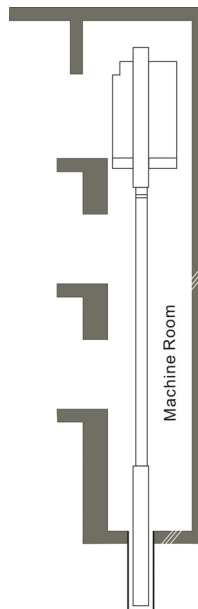
1. Passenger elevator: speed 45M/min to 150M/min; max. weight 450kg (6 passengers) to 1,350kg (20 passengers), applicable for common residences and office buildings.
2. Freight elevator: speed 45M/min to 105M/min; max. weight 600kg to 2,500kg, applicable for factory, factory buildings or freight transportations in the buildings.

Besides, bed elevators, parking elevators, meal elevators, elevator doors and escalators all belong to the elevator industry.

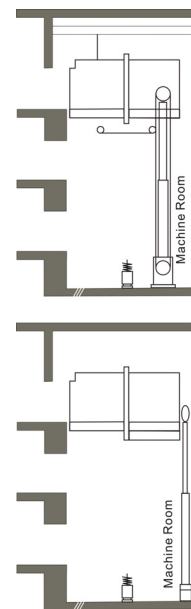
Various motive powers for elevators:



(Figure 1)



(Figure 2)



(Figure 3)

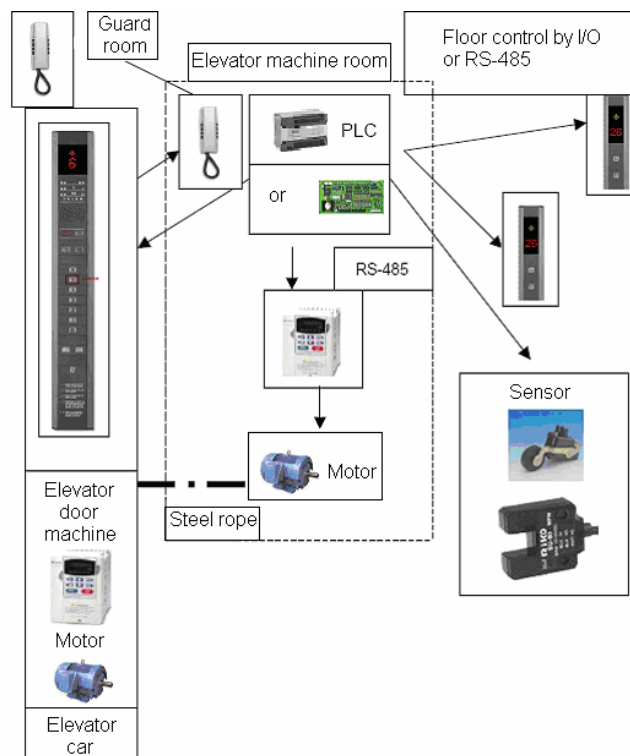
1. Traction elevator: it is the common drive way and adopts the power generated from the master machine to drive the elevator car via roller to move upward and downward smoothly. It only needs to consider the support strength to the elevator as shown in figure 1.

2. Direct-plunger hydraulic elevator: It drills a hole with the depth, which is equal to the whole traveling distance, to bury the protective steel tube with the hydraulic cylinder. The plunger is used to hold the elevator car to move upward and downward. It is most used in the lower-floor buildings as shown in figure 2.
3. Indirect-plunger hydraulic elevator: it doesn't need to bury the protective steel tube. After consolidating the bottom of the elevator pit, the hydraulic cylinder is able to stand upright on the bottom of the elevator pit and the power is transmitted by the steel rope and rope sheave indirectly. The benefit is able to get higher traveling position as shown in figure 3.

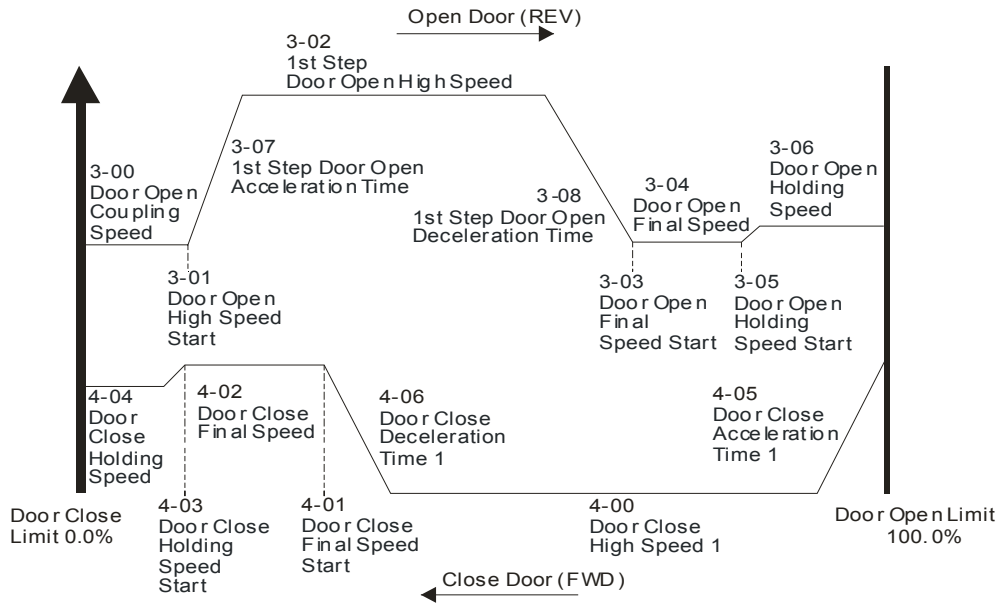
Delta's VFD series AC motor drive, including VFD-VE, VFD-VL, VFD-M-D, VFD-E and VFD-M series, and DVP series PLC are applicable for the elevator industry. As for the low-floor buildings, it is able to adopt DVP series PLC instead of single chip for I/O signals. Because the high speed is less demanded in the communication control, most of them use PLC control.

VFD-VL series is a specific drive designed for the elevator industry and able to drive not only typical induction motors but also popular permanent magnet motors. It provides the specific elevator parameters for elevator engineers to adjust elevator's traveling distance and smooth level easily. VFD-VE series is applicable for the common induction motors. In terms of applications, VFD-VL and VFD-VE series are applicable for common residences, office buildings and freight elevators. VFD-M series is applied in low-floor buildings, such as common small elevators, home elevators, meal elevators and hydraulic elevators.

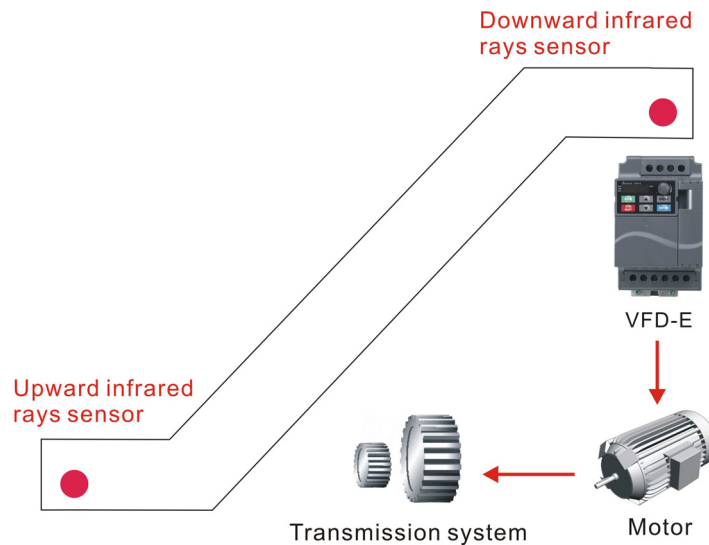
See below for a simple structure of elevator applications:



VFD-M-D series is particular designed for the elevator door. It controls the switch of the elevator doors to adjust the speed curve of door open/close easily and offer complete protections.



VFD-E series is built-in with simple PLC and applicable for escalators. This series is able to edit simple PLC programs for starting/stopping escalators and change the speed of escalators to save energy.



More information on Delta's AC motor drive, visit our website at http://www.delta.com.tw/product/em/drive/ac_motor/ac_motor_main.asp