CLAIMS:

1. An elevator equipped with an electronic safety system, comprising:

a safety controller (40) to check for an abnormal condition based on input information from sensors monitoring an operation state of an elevator car (1) and to produce a command signal to bring the elevator car to a safe state;

wherein when it is decided based on the sensor input information that the elevator car (1) is at rest, the safety controller (40) performs a self-diagnostic to see if it is working normally.

2. An elevator equipped with an electronic safety system according to claim 1, wherein the safety controller (40) uses diagnostic input information to perform the self-diagnostic.

3. An elevator equipped with an electronic safety system according to claim 1, wherein the safety controller includes:

a plurality of elevator-at-rest check units (86A, 86B) to decide if the elevator car (1) is at rest;

a plurality of input selection units (85A, 85B) to output the sensor input information when the elevator car is operating normally and, when the elevator-at-rest check units (86A, 86B) decide that the elevator car is at rest, output the diagnostic input information; and

a plurality of processing units (81A, 81B) to check an anomaly of the elevator car based on the output information from the input selection units (85A, 85B).

4. An elevator equipped with an electronic safety system according to claim 3, further comprising:

comparison units to compare an output from one of the processing units (81A, 81B) with an output from the other processing unit;

wherein the diagnostic input information is information to stop the elevator car.

5. An elevator equipped with an electronic safety system according to claim 3, wherein the diagnostic input information is information to stop the elevator car;

wherein if the output of one of the processing units 81A, 81B and the output of the other processing unit, when compared, disagree, the elevator car is stopped.

6. An elevator equipped with an electronic safety system according to claim 3, wherein the diagnostic input information is information to stop the elevator car;

wherein when the elevator-at-rest check units (86A, 86B) decide that the elevator car is at rest and if an output from one of the processing units (81A, 81B) and an output from the

other processing unit agree as a stop signal, it is diagnosed that the safety controller (40) is working normally.

7. An elevator equipped with an electronic safety system according to claim 3, wherein the sensors include an encoder (21) for detecting a speed and a position of the elevator car (1) and an elevator car door switch (25) mounted on the elevator car (1) for detecting an open/close state of the door;

wherein, when a state in which the elevator car door (1) is closed and the speed of the elevator car (1) is zero persists for a predetermined time, it is decided that the elevator car is at rest.

8. An elevator equipped with an electronic safety system according to claim 3, wherein the sensors are a car interior monitoring camera (26) for checking the presence or absence of passengers inside the car or a car weight sensor (27);

wherein, when a state in which there are no passengers in the elevator car (1) persists for a predetermined time, it is decided that the elevator car is at rest.

9. An elevator equipped with an electronic safety system according to claim 3, wherein the safety controller (40) comprises two microcomputers (50, 60) each having the elevator-at-rest check unit (86A, 86B), the input selection unit (85A, 85B) and the processing unit (81A, 81B).

CLAIMS

1. An elevator equipped with an electronic safety system, comprising:

a safety controller (40) having a first processing device(50) and a second processing device (60) to check for an abnormal condition based on input information from sensors monitoring an operation state of an elevator car (1) and to produce a command signal to bring the elevator car to a safe state;

wherein each of the first processing device (50) and the second processing device (60) includes:

an elevator-at-rest check units (86A, 86B) to decide if the elevator car (1) is at rest;

a diagnostic input information storage unit (87A, 87B) to record and store a diagnostic input information to stop the elevator car;

an input selection units (85A, 85B) to output the sensor input information when the elevator car is operating normally and, when the elevator-at-rest check units (86A, 86B) decide that the elevator car is at rest, output the diagnostic input information;

a processing units (81A, 81B) to check an anomaly of the elevator car based on the output information from the input selection units (85A, 85B) and to output a stop signal; and

a comparison unit (84A, 84B) to compare an output from the first processing device (50) with an output from the second processing device (60);

wherein when the elevator-at-rest check units (86A, 86B) decide that the elevator car is at rest each of the processing devices (50, 60) outputs the stop signal from the diagnostic input information, if the comparison units (84A, 84B) decide that outputs from the first processing device (50) and the second processing device (60) disagree as a stop signal the elevator car (1) is stopped and if the outputs agree as a stop signal it is diagnosed that the safety controller (40) is working normally.

2. An elevator equipped with an electronic safety system according to claim 1, wherein the sensors include an encoder (21) for detecting a speed and a position of

the elevator car (1) and an elevator car door switch (25) mounted on the elevator car (1) for detecting an open/close state of the door;

wherein, when a state in which the elevator car door (1) is closed and the speed of the elevator car (1) is zero persists for a predetermined time, it is decided that the elevator car is at rest.

3. An elevator equipped with an electronic safety system according to claim 1, wherein the sensors are a car interior monitoring camera (26) for checking the presence or absence of passengers inside the car or a car weight sensor (27);

wherein, when a state in which there are no passengers in the elevator car (1) persists for a predetermined time, it is decided that the elevator car is at rest.

4. An elevator equipped with an electronic safety system according to claim 1, wherein the safety controller (40) comprises a multicore microcontroller having the plurality of processing device in one semiconductor chip.