LD-I-A ELEVATOR LOAD DETECTOR

USER MANUAL

ZHUHAI ALPHA E&M CO., LTD.

Add: 4th Floor No.1200 Jiuzhou Road Zhuhai China
Tel: 0756-3326073 3326175 Fax: 0756-3326352
Web: http://www.alpha-lift.com  E-Mail: m1710@163.com
Mobile: 13326621995 13326678909
LD-I-A elevator load detector is designed for detecting the load of the elevator. It can put out switch signal and analog signal to elevator control system and inverter.

A. Principle

This system is composed of a control device and a weighting sensor mounted at the end of steel wire rope.

It can put out light load, full load and over load switch signals, it can also put out analog Voltage output (0~10V) and analog current output (4~20mA).

Sensor Position: at the end of steel wire rope.
B. Character of LD-I-A

1. It is easy to fix, weighting sensor is fixed at the end of the rope.
2. Microprocessor intellectual control, can display the actual load.
3. You can set parameter and study load by menu operation.
4. Have special floor memory learning function, can compensate automatically the changes of weight while car moves in the well.
5. Set light load, full load and over load of elevator.
6. In floor memory learning mode, it supports BCD code, 7 segment code, and door zone counter.
7. Load learning function.

C. Parameter of LD-I-A

Power: DC24V ±15%
Output of relay: DC 60V 0.3A
Input: DC 15-30V
Weighting Sensor outline: 140×53×46 (unit: mm)
LD-IA control device outline: 155×105×42 (unit: mm)

D. Terminal

1-2: POWER, DC24V, 1 TO +24V, 2 TO GND.
3: COM1: common terminal of OUT1, OUT2 and OUT3.
4: OUT1: light load output
5: OUT2: full load output
6: OUT3: over load output
7: Weighting Sensor output signal A — To white wire of sensor
8: GND of Power to the sensor (0V) — To black wire of sensor
9: weighting Sensor output signal B — To green wire of sensor
10: Power(+12V ) to the sensor — To red wire of sensor
11-19: Used for well compensation
   19 is the input common terminal of 11 to 18
20: not used
21: not used
22: not used
23: 4–20mA Analog output IOUT–.
24: 0–10V Analog output VOUT–.
25: 4–20mA Analog output IOUT+
26: 0–10V Analog output VOUT+.
In BCD code mode, the relation of floor and BCD code as follow:

<table>
<thead>
<tr>
<th>BCD code</th>
<th>height byte</th>
<th>BCD code</th>
<th>low byte</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0 0</td>
<td>0X</td>
<td>0 0 0 0</td>
<td>X0</td>
</tr>
<tr>
<td>1 0 0 0</td>
<td>1X</td>
<td>1 0 0 0</td>
<td>X1</td>
</tr>
<tr>
<td>0 1 0 0</td>
<td>2X</td>
<td>0 1 0 0</td>
<td>X2</td>
</tr>
<tr>
<td>1 1 0 0</td>
<td>3X</td>
<td>1 1 0 0</td>
<td>X3</td>
</tr>
<tr>
<td>0 0 1 0</td>
<td>4X</td>
<td>0 0 1 0</td>
<td>X4</td>
</tr>
<tr>
<td>1 0 1 0</td>
<td>5X</td>
<td>1 0 1 0</td>
<td>X5</td>
</tr>
<tr>
<td>0 1 1 0</td>
<td>6X</td>
<td>0 1 1 0</td>
<td>X6</td>
</tr>
<tr>
<td>1 1 1 0</td>
<td>7X</td>
<td>1 1 1 0</td>
<td>X7</td>
</tr>
</tbody>
</table>

WEIGHTING SENSOR

POWER DC24V
OUT1: LIGHT LOAD
OUT2: FULL LOAD
OUT3: OVER LOAD
COM1: COMMON OF OUT1~OUT3

UP IS THE UP SIGNAL OF ELEVATOR
DZ IS THE DOOR ZONE SIGNAL OF ELEVATOR
DOOR ZONE COUNTER MODE

WEIGHTING SENSOR
E. LD-I-A MENU operation

The LD-I-A Operation menu has 11 sub menus:
They are:
1. empty load studying;
2. full load studying;
3. floor memory learning;
4. set rated load (for example: 1000Kg or 2000Kg ...);
5. set light load- (for example: 100Kg, 200Kg ...);
6. set over load— (for example: 1150Kg 2300Kg ...);
7. floor mode—this parameter must be set to over 200 for example: 300 or 400;
8. set full load— (for example: 950KG);
9. set the output (nc or no of the relay) of light load;
a. set the output (nc or no of the relay) of full load;
b. set the output (nc or no of the relay) of over load.

1. Empty load studying

Elevator is at the main floor (the first floor) and the load is guaranteed to be empty.

Press ENTER button as follow:

Now it is in empty studying mode, the operator leaves the car roof, after 30 seconds, the studying process will end.
2. Rated load studying

If there are no enough weight nearby, the weight in the car can be less than rated load, but the MENU 4 should be set to the actual load in the car.

After studying, the MENU 4 should be set to the rated load.

Elevator is at the main floor (the first floor) and the load is guaranteed to be rated load as follow:

Press ENTER button, as follow:

Now it is in rated load studying mode, the operator leave the car, after 30 seconds, the studying process will end.

3. Floor memory learning

Floor memory learning should be operated after setting all parameters and the empty load study and rated load study have been finished.

The goal of floor memory learning is to compensate the weight change while the car moves in the well, the weight change is the result of length change of the electrical wire rope and compensation chain.

If the floor display is BCD code, the value of MENU 7 should be set to 101.
If the floor display is 7 segment code, the value of MENU 7 should be set to 102.
If it is door zone mode to count the floor, the value of MENU 7 should be set to 103.
If it needs no compensation, the value of MENU 7 should be set to over 200, for example 300 or 400.
In the course of floor memory learning, the load of the elevator should not be changed.
Floor memory learning should start at the lowest floor.

If the control device is mounted on the top of car, the operators go to the top of car. Press menu, select 3 as follow:
Press ENTER button, LED display as follow: A is the sign of learning mode, the follow number behind “A” is the difference weight between this floor and the lowest floor.

In the floor memory learning mode, at the lowest floor, press ▲ button, after that, go up floor by floor, at every floor, after stop 15 seconds, press ▲ button, the control device will save the difference weight from this floor to the lowest floor. At the top floor, after press ▲ button, then press ENTER button to end the study process.

After floor memory learning, you can verify the result as follow:

Set the value of MENU 7 to “9”

Then it will display the total landing of this elevator, the values of difference weight of every floor, the value should increase by degrees.

After verifying! Set the value of MENU 7 to 101, 102 or 103 according to the floor mode.

4. Set the rated load

Press MENU button, select 4 as follow:

Press ENTER button, press ▲ and ▼ button to set elevator rated load as 1000Kg, as follow:
5. Set the light load

Press MENU button, select 5 as follow:

Press ENTER button, press ▲ and ▼ button to set elevator light load as 200Kg, as follow:

Press ENTER button to save the value and return.

6. Set the over load

Press MENU button, select 6 as follow:

Press ENTER button, press ▲ and ▼ button to set elevator over load as 1100Kg, as follow:
7. Set the floor mode

If the floor display is BCD code, the value of MENU 7 should be set to 101.
If the floor display is 7 segment code, the value of MENU 7 should be set to 102.
If it is door zone mode to count the floor, the value of MENU 7 should be set to 103.
If it needs no floor memory learning compensation, the value of MENU 7 must be set over 200, for example 300 or 400.

As follow:

8. Set the full load

Press MENU button, select 8 as follow:

Press ENTER button, press ▲ and ▼ button to set elevator over load as 920Kg, as follow:
Press ENTER button to save the value and return.

9. Set the output (NC or NO of the relay) of light load

Press MENU button, select 9 as follow:

- Press ENTER button, press ▲ and ▼ button to set the value.
- If the value is zero, the output of light load is NC (normal close).
- If the value is not zero, the output of light load is NO (normal open).

Press ENTER button to save the value and return.

a. Set the output (NC or NO of the relay) of full load

Press MENU button, select “a” as follow:

- Press ENTER button, press ▲ and ▼ button to set the value.
- If the value is zero, the output of full load is NC (normal close).
- If the value is not zero, the output of full load is NO (normal open).
Press ENTER button to save the value and return.

**b. Set the output (NC or NO of the relay) of over load**

Press MENU button, select “b” as follow:

Press ENTER button, press ▲ and ▼ button to set the value.
If the value is zero, the output of over load is NC (normal close).
If the value is not zero, the output of over load is NO (normal open).

Press ENTER button to save the value and return.

**F. Adjusting Process**

The weighting sensor is fixed at the end of the rope.
First set four parameters:
- Menu 4: set rated load!
- Menu 5: set light load!
- Menu 6: set over load!
- Menu 8: set full load!
After setting the four parameters, let the car to be empty!
- Menu 1: empty load studying!
After empty load studying, let the car to be rated load!
- Menu 2: rated load studying!
- Menu 7: set the right floor mode!
- Menu 3: floor memory learning!
G. Deal with fault

1. LED display 9999, the output of relay are not right.
   Cause A: Have not studied empty load and rated load. Or have not set the values of rated load,
   empty load, light load and full load Cause.
   Cause B: IF NO COPENSATION, The value of menu 7 must be set to over 200, For example: 300 or
   400.

2. LED display 0000, the output of relay are not right.
   Cause A: The output of sensor is not right. Please check the sensor or replace it with a good
   one.
   Cause B: The power of the sensor is not right. It should be DC12V. Please check whether the voltage
   between the terminal 20 and 22 is DC12V.