LD-I-A ELEVATOR LOAD DETECTOR

USER MANUAL

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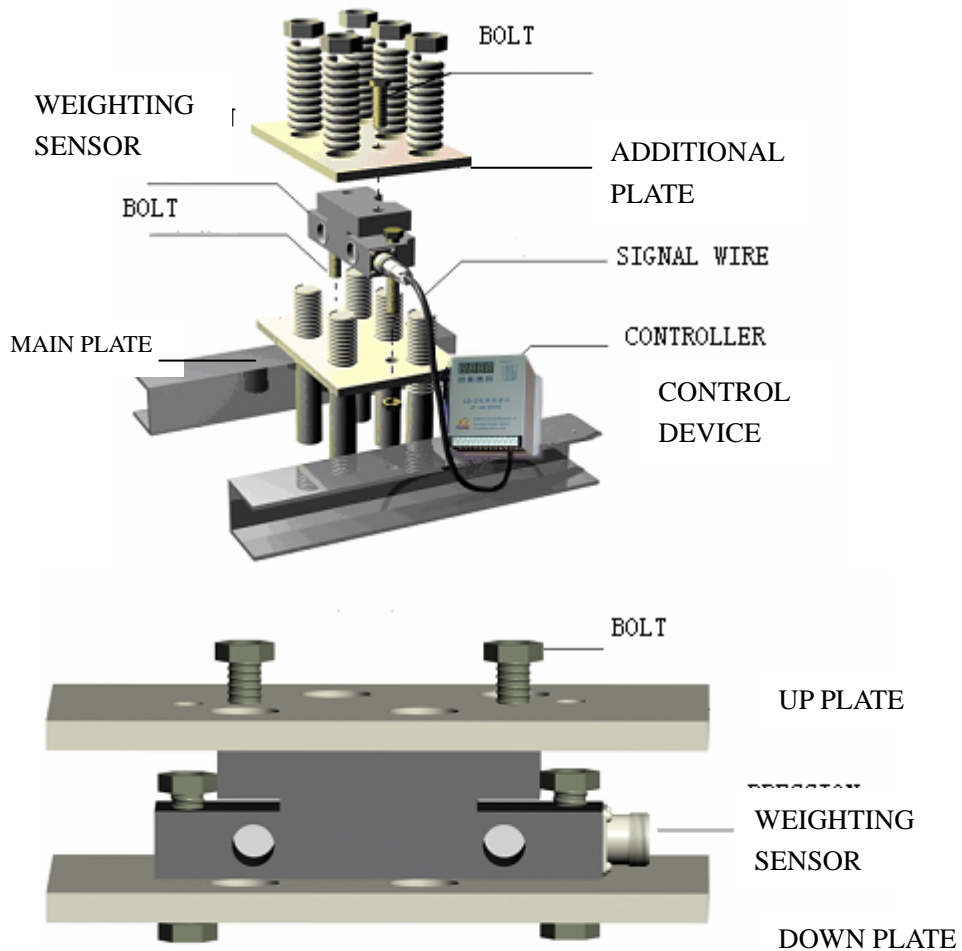Mobile : 13326621995   13326678909

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.

WEIGHTING SENSOR

BOLT

ADDITIONAL PLATE

BOLT

SIGNAL WIRE

MAIN PLATE

CONTROLLER

CONTROL DEVICE

BOLT

UP PLATE

WEIGHTING SENSOR

DOWN PLATE

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.

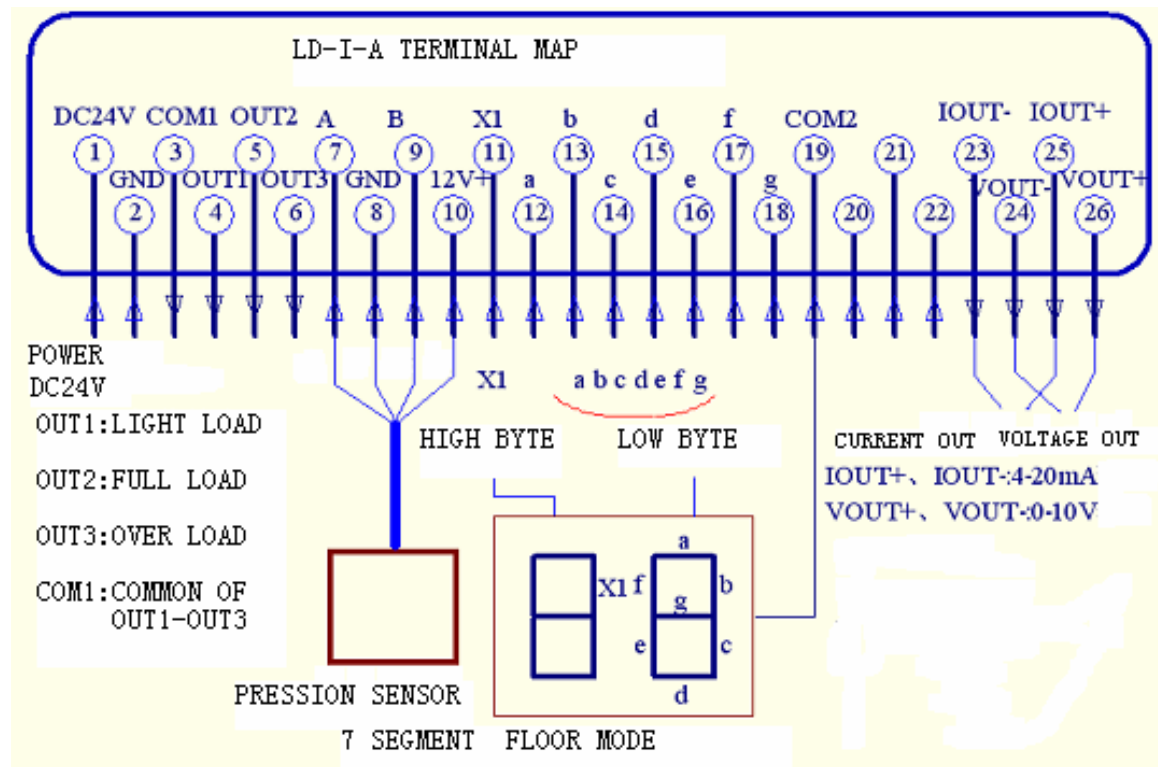# C、Parameter of LD-I-A

Power:DC24V±15%

Output of relay： DC 60V 0.3A

Input：DC 15-30V
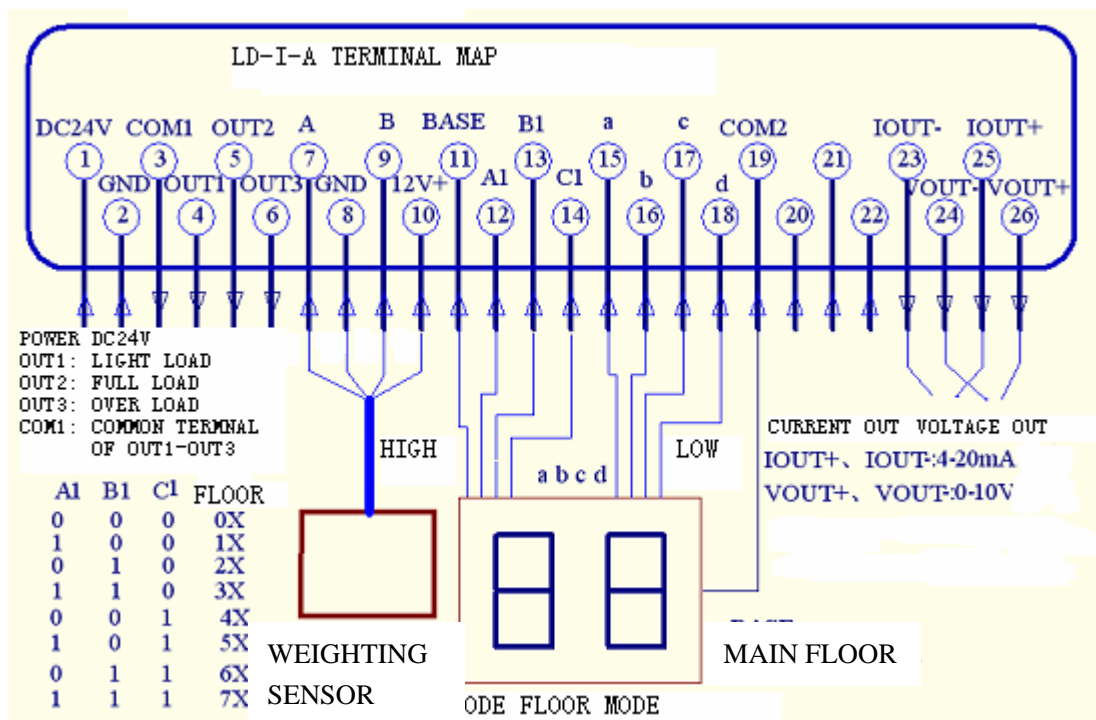
Weighting Sensor outline：140×53 ×46   (unit: mm)

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

23：4-20m Analog output IOUT- .

24：0-10V Analog output VOUT- .

25：4-20mA Analog output IOUT+
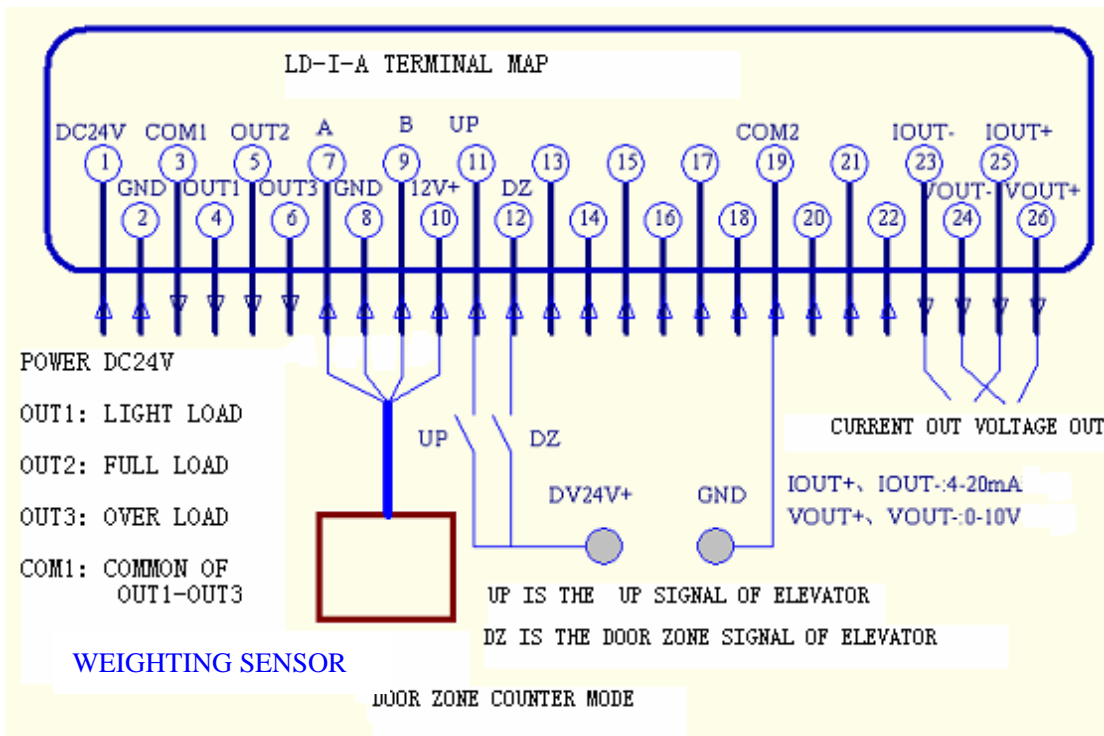
26： 0-10V Analog output VOUT+ .

LD-I-A TERMINAL MAP

DC24V　COM1　OUT2　A　B　X1　b　d　f　COM2　IOUT-　IOUT+
① ③ ⑤ ⑦ ⑨ ⑪ ⑬ ⑮ ⑰ ⑲ ㉑ ㉓ ㉕
GND　OUT1　OUT3　GND　12V+　a　c　e　g　VOUT-　VOUT+
② ④ ⑥ ⑧ ⑩ ⑫ ⑭ ⑯ ⑱ ⑳ ㉒ ㉔ ㉖

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

X1
a b c d e f g

HIGH BYTE　LOW BYTE

CURRENT OUT　VOLTAGE OUT
IOUT+、IOUT-:4-20mA
VOUT+、VOUT-:0-10V

PRESSION SENSOR
7 SEGMENT　FLOOR MODE

WEIGHTING SENSOR

LD-I-A TERMINAL MAP

DC24V　COM1　OUT2　A　B　BASE　B1　a　c　COM2　IOUT-　IOUT+
① ③ ⑤ ⑦ ⑨ ⑪ ⑬ ⑮ ⑰ ⑲ ㉑ ㉓ ㉕
GND　OUT1　OUT3　GND　12V+　A1　C1　b　d　VOUT-　VOUT+
② ④ ⑥ ⑧ ⑩ ⑫ ⑭ ⑯ ⑱ ⑳ ㉒ ㉔ ㉖

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

A1	B1	C1	FLOOR
0	0	0	0X
1	0	0	1X
0	1	0	2X
1	1	0	3X
0	0	1	4X
1	0	1	5X
0	1	1	6X
1	1	1	7X

HIGH

a b c d

LOW

CURRENT OUT　VOLTAGE OUT
IOUT+、IOUT-:4-20mA
VOUT+、VOUT-:0-10V

WEIGHTING
SENSOR

ODE FLOOR MODE

MAIN FLOOR

3

In BCD code mode, the relation of floor and BCD code as follow:

BCD code height—byte BCD code low byte

A1	B1	C1		Floor
0	0	0		0X
1	0	0		1X
0	1	0		2X
1	1	0		3X
0	0	1		4X
1	0	1		5X
0	1	1		6X
1	1	1		7X

a	b	c	d	Floor
0	0	0	0	X0
1	0	0	0	X1
0	1	0	0	X2
1	1	0	0	X3
0	0	1	0	X4
1	0	1	0	X5
0	1	1	0	X6
1	1	1	0	X7
0	0	0	1	X8
1	0	0	1	X9

LD-I-A TERMINAL MAP

POWER DC24V

OUT1: LIGHT LOAD

OUT2: FULL LOAD

OUT3: OVER LOAD

COM1: COMMON OF
OUT1-OUT3

WEIGHTING SENSOR

UP IS THE UP SIGNAL OF ELEVATOR

DZ IS THE DOOR ZONE SIGNAL OF ELEVATOR

DOOR ZONE COUNTER MODE

CURRENT OUT VOLTAGE OUT

IOUT+、IOUT-:4-20mA

VOUT+、VOUT-:0-10V

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:
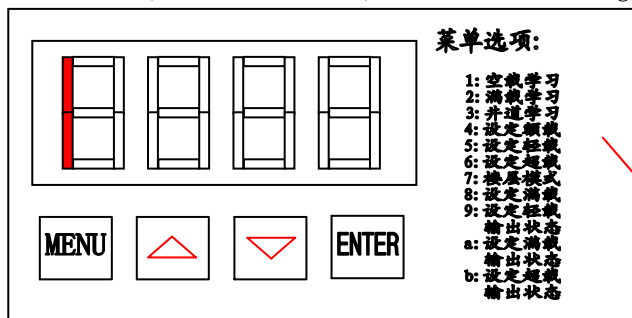
1. Empty load learning
2. Full load learning
3. Floor memory learning
4. Set the rated load
5. Set the light load
6. Set the over load
7. Set the floor mode
8. Set the full load
9. Set the output of light load
   a. Set the output of full load
   b. Set the output of over load
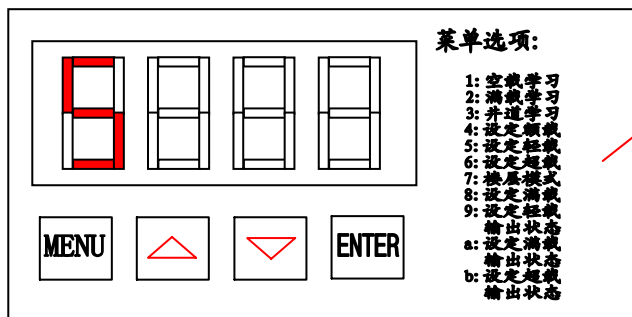
Now it is in empty studying mode ，the operator leaves the car roof, after 30 seconds , the studying process will end .

2. Rated load studying

If there are no enough weight nearby, the weight in the car can be less than rated load ,but the MENU4 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：
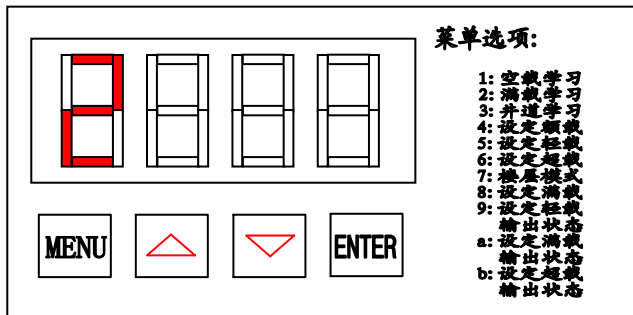
Press ENTER button , as follow：
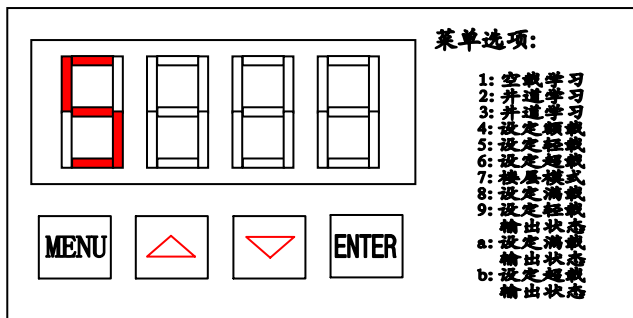
Now it is in rated load studying mode , the operator leave the car ,after 30 seconds, the studying process will end

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:
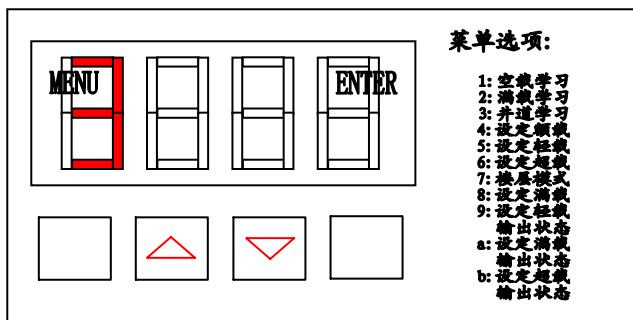
Press ENTER button，LED display as follow： A is the sign of learning mode，the follow number behind "A" is the difference weight between this floor and the lowest floor.
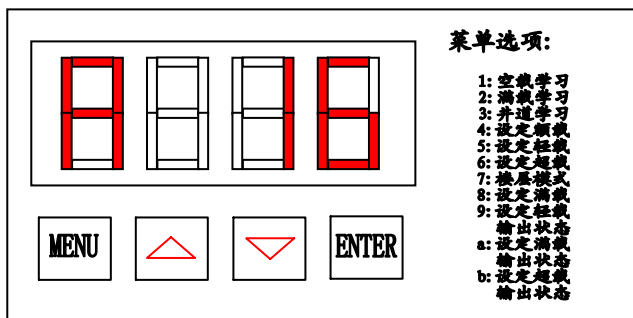
In the floor memory learningmode , at the lowest floor, press▲button，after that , go up floor by floor , at every floor , after stop 15seconds，press ▲button，the control device will save the difference weight from this floor to the lowest floor . at the top floor, after press ▲ button，then press ENTER 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 MENU7 to 101,102 or 103 according to the floor mode.

4.Set the rated load

Press MENU button , select 4 as follow:
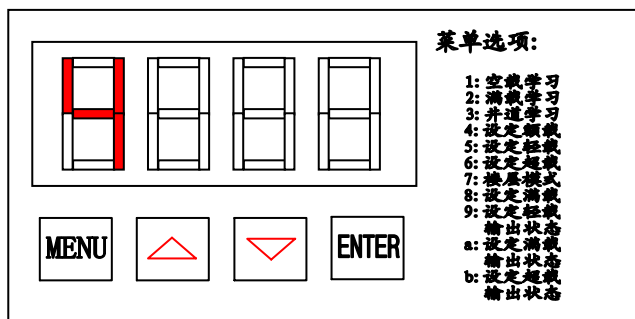
Press ENTER button，press▲and ▼button to set elevator rated load as 1000Kg,as follow：
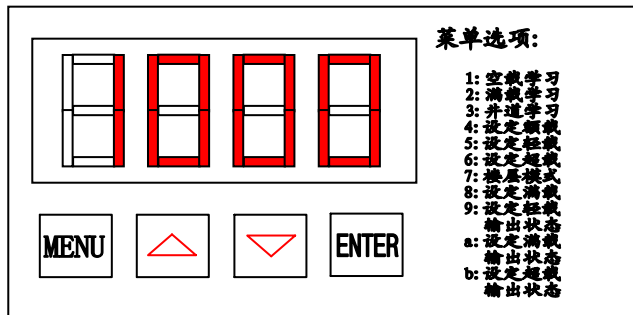
Press ENTER button to save the value and return.

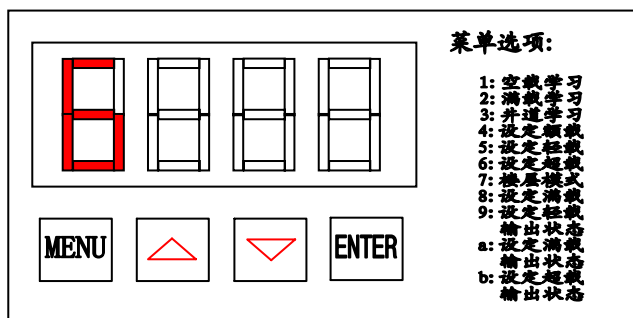## 5. Set the light load

Press MENU button , select 5 as follow:
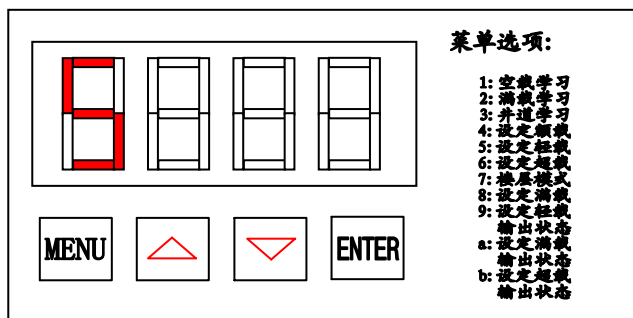
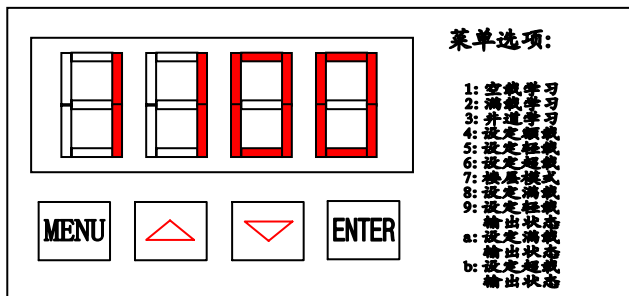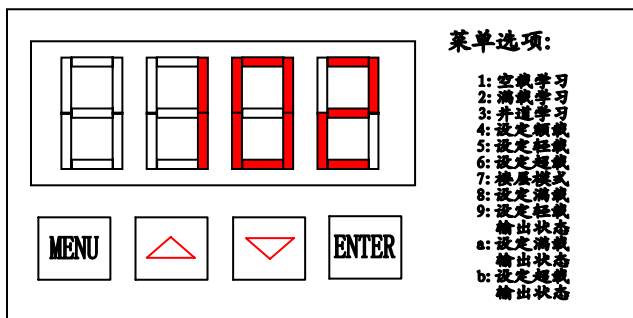Press ENTER button，press▲and ▼button to set elevator light load as 200Kg,as follow:
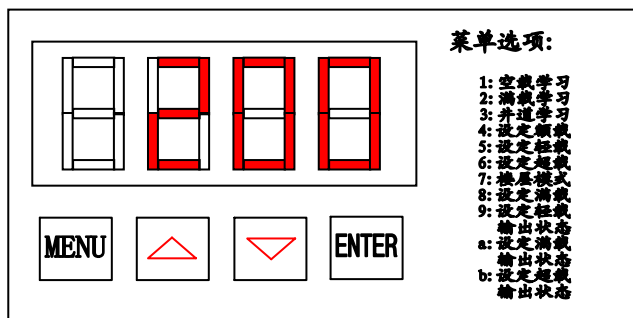
Press ENTER button to save the value and return.

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:

Press ENTER button to save the value and return.

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 learningcompensation, the value of MENU 7 must be set to over 200 , for example 300 or 400.
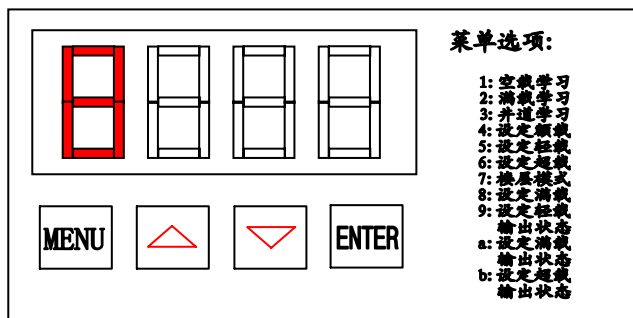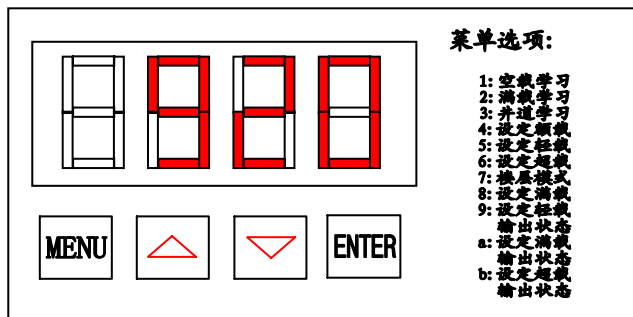
As follow:

Press ENTER button to save the value and return.

8. Set the full load
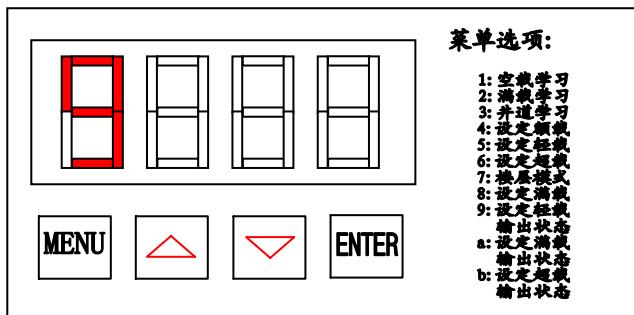
Press MENU button , select 8 as follow:

Press ENTER button，press▲and ▼button to set elevator over load as 920Kg,as follow：

Press ENTER button to save the value and return.

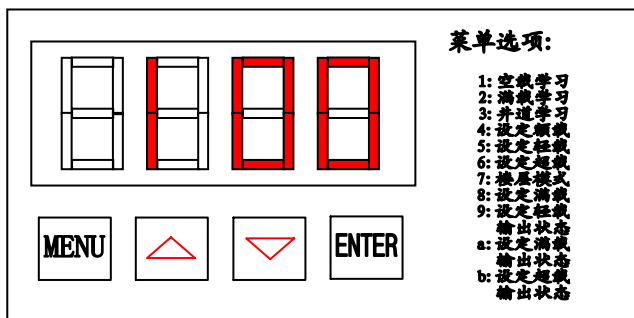# 9. Set the output(NC or NO of the relay) of light load

Press MENU button , select 9 as follow:

Press ENTER button，press▲and ▼button to set the value 。

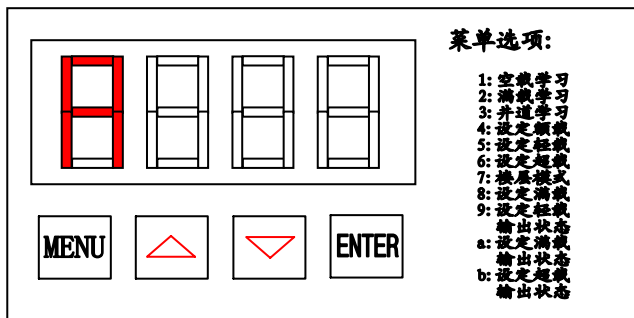If the value is zero, the output of light load is NC (normal close)。

If the value is not zero, the output of light load is NO (normal open)。

Press ENTER button to save the value and return。
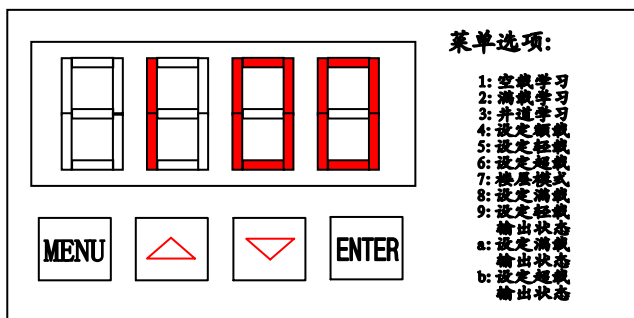
a. Set the output (NC or NO of the relay) of full load

Press MENU button , select "a" as follow:

Press ENTER button，press▲and ▼button to set the value

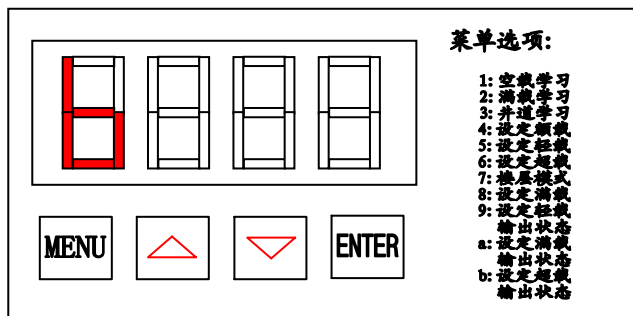If the value is zero, the output of full load is NC (normal close)

If the value is not zero, the output of full load is NO (normal open)

10

Press ENTER button to save the value and return.

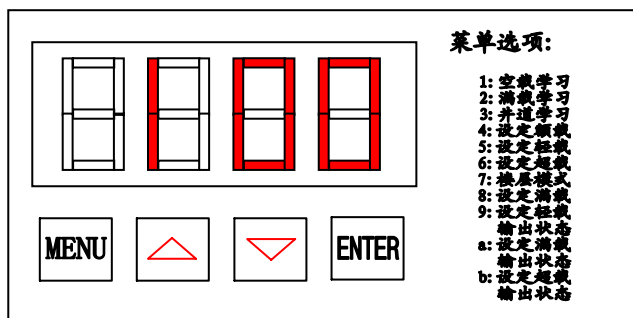## b. Set the output(NC or NO of the relay) of over load

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 <mark>over load</mark> is NC (normal close)

If the value is not zero, the output of <mark>over load</mark> 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.