# Instructions Manual

Unit Control ECO500

1. Introduction

ECO device is the result of the industrial weighing systems evolution based in load limitation by strain gages technology.

The main field of application is the load limitation in elevators. The measurement accuracy is higher than the usually required.

This device measures the load supported by the cell and activates the relays when the levels are over the programmed levels. The relay contacts inform the manoeuvre board about the load status.

2. Dimmensions
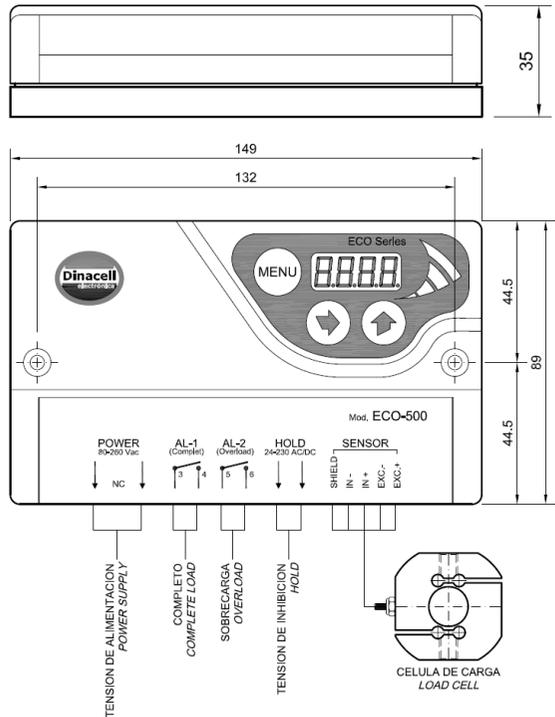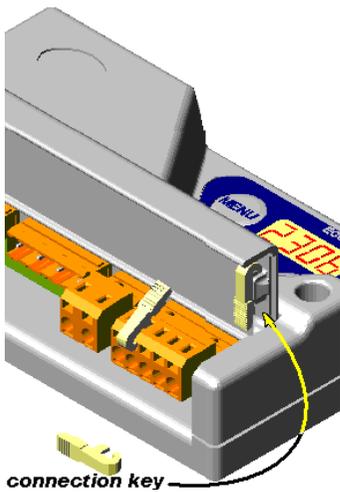
Box characteristics

- V0 fireproof plastic
- IP-50

3. Control inputs and outputs.

- Connection for the load cell.

- Two relays with an opened voltage free contact to program the stop status and the load level to change the status.

- HOLD is a universal input with a range from 24 to 230V AC or DC. This input is used to communicate to the device that the elevator is in motion and it works as follows:
  - o It blocks the weighing process to avoid that the relays change the status while the elevator is moving.
  - o It knows when the elevator from one floor to another to make chain compensations.

  The use of this input is optional, but necessary if chain compensation is required.

  Remark: When the signal is active the device shows the word HOLD blinking in the display.

4. Access to menu parameters.

(MENU) Pressing this key successively all the programmable parameters are shown in cycle way. To go back to the weight presentation, press the key until the end of the menus, or press it during 3 seconds.

Once there is a parameter selected, press this key to modify the value.

If this key is kept pressed when there is a parameter selected, the display shows the value of that parameter.

5. Modification of the parameter.

Modification of an alarm
1. Press successively the key 🔘 until select the wished alarm.
2. Press the key ◉ to enter in parameter modification. The left digit blinks.
3. Select the wished value in the display using the keys ◉ and ◉.
4. Press the key 🔘 to introduce the chosen value.
5. Change the stop status of the relay with the key ◉.
6. Press twice 🔘 to save the change. If it is pressed once, after 10 seconds the process finishes without saving the changes.

Modification of a parameter (no alarm)
7. Press successively the key 🔘 until select the wished parameter.
8. Press the key ◉ to enter in parameter modification. The left digit blinks.
9. Select the wished value in the display using the keys ◉ and ◉.
10. Press twice 🔘 to save the change. If it is pressed once, after 10 seconds the process finishes without saving the changes, and the display shows again the parameter.

6. Programming structure

Pressing successively the key 🔘 the menu parameters are shown in the following order:

`2036`	Device in weighing mode.
MENU	
`AL 1`	Alarm level 1 and relay status 1
MENU	
`AL 2`	Alarm level 2 and relay status 2
MENU	
`CEro`	Adjustment on zero
MENU	
`PESO`	Adjustment of sensibility with a well known weight
MENU	
`CELL`	Adjustment of sensibility with the nominal load of the cell
MENU	
`CAdE`	Maximun value of chain compensation weight

7. Unit control adjustment.

This chapter is necessary for the unit knows the relation between the signal from the cell and the weight introduced in the cabin. It is recommended to make the adjustments in the ground floor.

The adjustment is made in 2 steps as follows:
1. <u>Setting of zero.</u>
2. <u>Adjustment of sensibility</u> (for this adjustment there are 2 methods).
     a. Adjustment of sensibility with a well known weight.
     b. Adjustment with direct transmission load cells.

<u>Setting of zero:</u>
1. Select menu option `[Ero`.
2. Check that the cabin is empty and press key ⊕. The display will blink.
3. Press ⓜ while the display is blinking to confirm the operation that starts with a countdown. At the end the display will show parameter `PESO`.

   Remark: If ⓜ is not pressed before the blinking finishes the operation will be not saved and the display will show again parameter `[Ero`.

<u>a. Adjustment of sensibility with a well known weight</u>(valid for all kind of load cells).
1. Introduce in the cabin a well known weight (it is recommended a minimum weight of 50% of the maximum load).
2. Select menu option `PESO`, and press ⊕ to enter in modification.
3. Input the value of the well known weight with the keys ⊕ ⊕.
4. Press the key ⓜ twice (The unit starts a countdown and the value remains saved). Then the display will show the next adjusting parameter `CELL`.

   Remark: If ⓜ is not pressed before the blinking finishes the operation will be not saved and the display will show again parameter `PESO`.

<u>b. Adjustment of sensibility with direct transmission load cells.</u>
1. With this method it is not necessary to introduce a well known weight in the cabin.
2. Select the menu option `CELL` and press ⊕ to edit the value.
3. Input the value of the nominal load of the cell with the keys ⊕ ⊕. In case of having several load cells the input value should be the sum of them.
4. To save the value press twice ⓜ (the value remains saved). Then the display will show the next adjusting parameter `CAdE`.

   Remark: If ⓜ is not pressed before the blinking finishes the operation will be not saved and the display will show again parameter `CELL`.

8. Chain compensation

The chain compensation is a software algorithm that verifies the weight difference between flats and compensates it.
The unit needs the HOLD signal active when the gates close to compensate the weight during the elevator movement.
`CADE` should have the estimated weight of the chain.

The standard value of `CADE` is zero, so it means that no chain compensation is made.

9. Electrical characteristics

Nominal tension 80-260Vac
Maximum current 50mA
Nominal frequency 50-60 Hz
Shortcircuitable power supply. Fuse is not replaceable.

10. Errors presentation.

	Error description	Action
Err 1	Load cell wrong connected, broken down or cable is cut.	Check the load cell connection.
Err 2	Negative overflow of the converter, so the load cell is giving a negative signal too high.	Check the load cell connection because it should be no negative charge.
Err 3	Positive overflow. Load cell is supporting a higher weight than the nominal load.	It is necessary to use a load cell with higher nominal load.
Err 4	Polarity error. It is detected when the control unit is adjusted with a well known weight and the polarity is changed, or the weight is not in the cabin during the adjustment.	Check the load cell connection. Adjust again on zero and weight.
Err 6	Data loss in memory.	Program again.
Err 7	Load cell with very low sensibility. Usually the unit is wrong adjusted.	Adjust again on zero and weight.

Remark: When an error is produced all the alarms are activated and the elevator remains blocked. If `Err6` is produced the relay contacts will open (RELE = OFF).

11. Quick programming guide.

1. Adjust alarm ⬚ with the load value that activates the relay 1.
2. Adjust alarm ⬚ with the load value that activates the relay 2.
3. Place the elevator in the ground floor.
4. Adjust the ⬚ with the cabin empty.
5. Place a well known weight in the cabin (minimum 50%).
6. Adjust the ⬚. Input the value of the well known weight.
7. Input in ⬚ the estimated weight of the chain.

Remark: It is important to adjust on zero before the weight adjustment.