

Addressable Automatic Test System

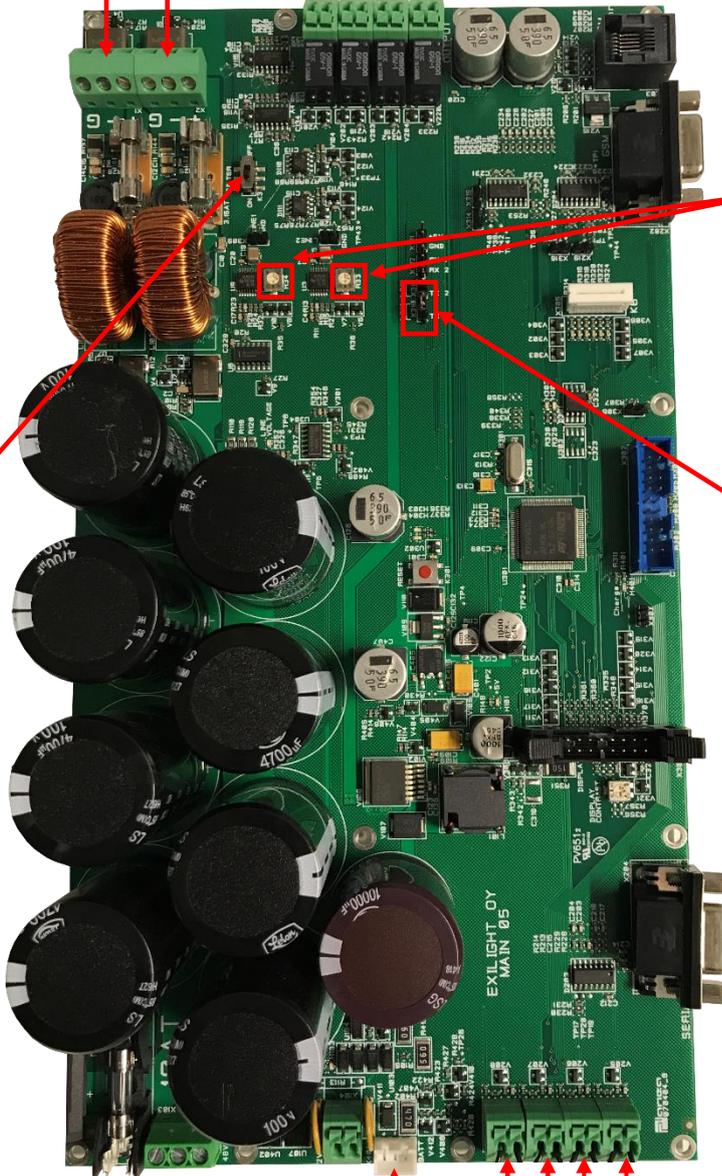
# ESC-200



## Quick Start

1. Mount the center to the wall.
2. Center should be placed in locked room so that only authorized personnel can use it.
3. When all the exit and emergency lights are installed connect the lines to the center
  - a. Do not install the lights into the line with voltage.
  - b. Make sure that “+” and “-“ are connected correctly.
4. Connect the NiMH battery to the centers circuit board.
5. Connect the 230V control voltage to the lighting center. Minimum requirement for mains cable is 2 x 1,5 mm<sup>2</sup>.
6. Push “SET” and browse with “UP” and “DOWN” buttons to “START NEW INSTALLATION”
  - a. New installation will start and it will take about 30 ... 45 minutes to complete
  - b. Founded addresses can be browsed with “LEFT” and “RIGHT” buttons
  - c. After the installation the center will automatically go to the normal “Everything ok” –status.
  - d. There is TWO loops in the center and both of them can hold up to 100 luminaires (max. 200 luminaires per center)
7. To set the date and time go from menu to “SET DAY + TIME”
8. Max. cable length from ESC-200 panel to the last luminaire is 400m. Cable that should be used is KLMA 2x0,8+0,8.
9. Emergency and exit lights
  - a. There is an address programmed in every luminaire and with the luminaire there is one additional address label which is to be added in to the drawings of the building. All the compatible luminaires are marked with “C”.
10. Adding an emergency or exit light
  - a. To add an emergency or exit light you just have to install the luminaire into the loop 1 or loop 2 and the center will automatically find the new luminaire.

Loop 1      Loop 2      Dry contact output



Switch K3: Filter ON/OFF (default ON). If panel is to be connected to earlier generation of ESC-200 set filter OFF.

Trimmers R33 and R34: Line output power. By default same as luminaire powers. Do not change without contacting supplier.

Jumpers X317 and X318: Do not change. By default they are connected and enable communication on line.

Battery connector

External control loop 1 and 2 dry contact

External control loop 2 dry contact

External control loop 1 dry contact

## Operating the ESC-200 Panel

There is a 2 line LCD display (20 char. / line) and five operating buttons: "LEFT", "RIGHT", "UP", "DOWN" and "SET".

Under the "SET" button there is a menu of rarely needed but never the less important functions. These functions may come handy while operating the center.

The MENU includes:

1. Normal status
  - a. Everything Ok
  - b. An Error code when something is wrong
2. Browse error
3. Annual test time
4. LED test time
5. Monthly test time
6. Demo mode
7. Start monthly test
8. Start annual test
9. Annual test duration
10. Area monitoring
11. Current measuring
12. GND leakage set up
13. Change language
  - a. English
  - b. Svenska = Swedish
  - c. Suomi = Finnish
14. Read address form PC
15. Stop / Allow communication errors
16. Browse appliances
17. Inverter use
18. Print appliance ID
19. Event log
20. Remove appliance
21. Print errors
22. Start new installation
23. Set day + time
24. Emergency lights on.

## 1. Normal status

Everything Ok: The display shows date and time

- "Everything Ok" "HH:MM"

Error code

- The display shows the latest error that has not been set off
- The top line in the display shows the amount of errors and the lower line shows the appliance ID (D), the loop (L) and the error code (E). For example: **Not set off 005/005 // D06397 L2 E03**
- You can what the error code means by pushing the "LEFT" button. It will indicate what the error code actually means, for example **"led disconnected"**
- To set off the error codes you have to push the "RIGHT" button two times.

## 2. Browsing errors

By pushing "SET" you can browse the errors that have been detected in the past.

The errors will be shown chronologically so that the latest error will be the first to show up on the display. You can browse the errors by pushing "UP" or "DOWN".

The display shows when the error was detected, appliance ID (D), loop (L) and the error code (E).

All error codes can be found in **attachment 2**.

## 3. Annual test time

Set the time and date for annual duration test.

## 4. LED test time

Set the time for LED blink test.

## 5. Monthly test time

Set the time and date for monthly test.

## 6. Demo mode

Here you can set demomode on. Demomode is only for presentation.

When the demomode is on the errors come more quickly to the panel.

## 7. Start monthly test

Function test is done automatically every month but here you can start that test manually.

## 8. Start annual test

Annual duration test is done automatically every year but here you can start that test manually.

## **9. Annual test duration**

Choose annual test duration, 1h or 3h.

## **10. Area monitoring**

Control area monitors connected to the system.

## **11. Current measuring**

## **12. GND Leakage Set Up**

## **13. Change language**

Here you can set the operating language to be English, Swedish or Finnish.

## **14. Read address from PC**

Appliance IDs can also be read from the PC.

## **15. Stop / Allow communication errors**

Normally these communication errors are stopped.

The center checks if there is some communication errors with appliance IDs

## **16. Browse appliances**

Here you can check all the appliances connected to the center.

First you have to choose Loop 1 or Loop 2 by pushing "SET" and then you can browse appliances by pushing "UP" or "DOWN".

## **17. Inverter use**

This is supposed to be switched ON only when using ESC-200P system with central battery. When using ESC-200 system this is supposed to be switched OFF.

## **18. Print appliance ID**

## **19. Event Log**

You can connect your PC with the ESC-200 and print out the events via Ethernet converter.

## **20. Remove appliance**

When removing appliance from Loop 1 or Loop 2 you also have to remove that appliance from the appliance list.

- This is because the center is constantly checking the status of every appliance and if the appliance has been removed it can't communicate with the ESC-200 center.

You can remove appliance from the appliance list as follows:

- From the menu choose "Remove appliance"
- Then choose if the appliance is in Loop 1 or Loop 2
- Find the appliance that needs to be removed by browsing the list with "UP" and "DOWN" buttons
- When you find the right appliance ID that has to be removed push "SET" three times. This is to make sure that you don't accidentally remove appliance that you are not supposed to remove.

## **21. Print errors**

You can connect your PC with the ESC-200 and print out the errors.

## **22. Start new installation**

By choosing "Start new installation" the center finds all the appliances connected to the system.

Center ask before new installation "delete memory" you can choose "no" or "yes". If you choose "yes" center will delete luminaire addresses what is in memory.

## **23. Set day + time**

Here you can set the date and time for the system

## **24. Emergency lights on**

This is to start test for the system. This is used to check the communication between panel and luminaires. Communication should be Ok if emergency luminaires are set ON with this test

## **Changing the Operating Language**

If the ESC-200 emergency lighting center is delivered to you with settings in Finnish, here is how you can change the language to English.

You start by pushing the "SET" button when you have the operating status shown in the picture 1.

Then push the "DOWN" button until you get the display shown in picture 2.

After that push "SET" and by "UP" or "DOWN" button choose "ENGLISH" as shown in the picture 3. Push "SET" to select the language.

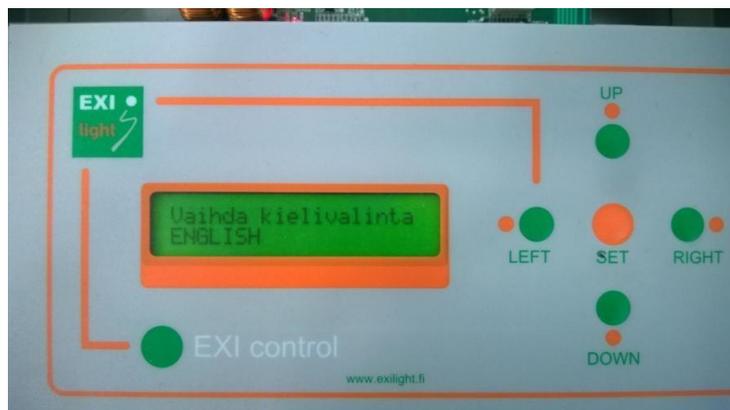
Now you have the ESC-200 Emergency Lighting Center set in English.



Picture 1.



Picture 2.



Picture 3.

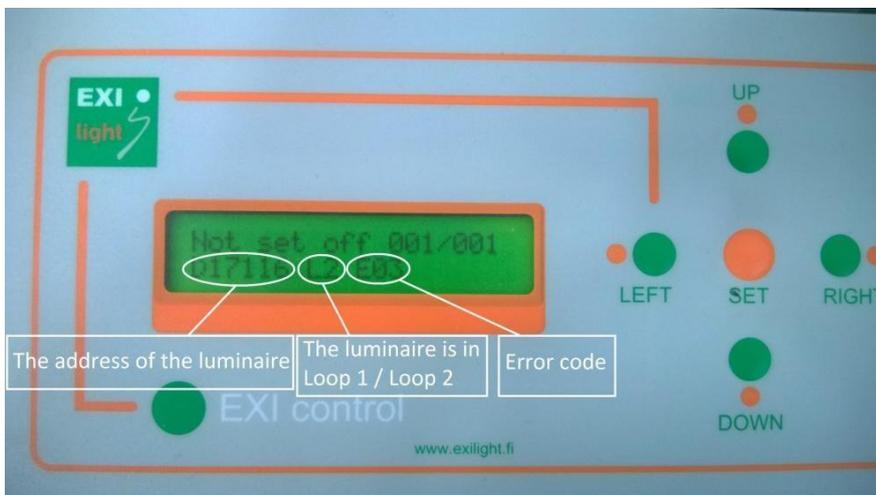
## Checking Error Status

If the display is showing an Error Code (Picture 4 and 5), you can set it off (Picture 6 and 7) to make sure it is actually a real Error. If the Error is real it will come back to the display within few minutes.

You can set off the Error Code by pushing the "RIGHT" button two (2) times in the display shown in pictures 4 and 5 (demonstrated in pictures 6 and 7).

If the Error Code returns to the display and it's a real Error then:

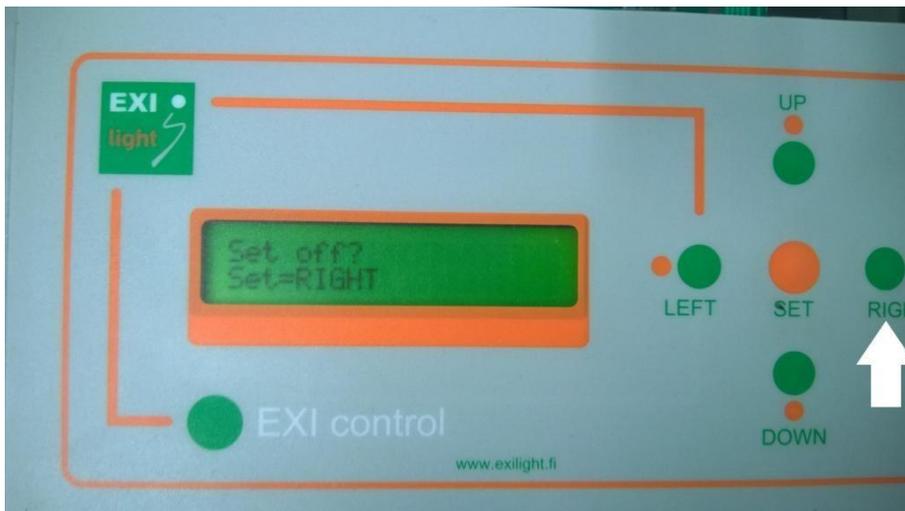
- Find out what the Error Code stands for (Picture 5).
- Find out where in the building that Emergency or Exit light is located and go check the lights status.



Picture 4. Reading the Error Code from the ESC-200 display.



Picture 5. You can see what the Error Code actually means by pushing "LEFT" button.



Picture 6. Set off the Error Code by pushing "RIGHT".



Picture 7. When the Error is set off the display will show "Everything OK".

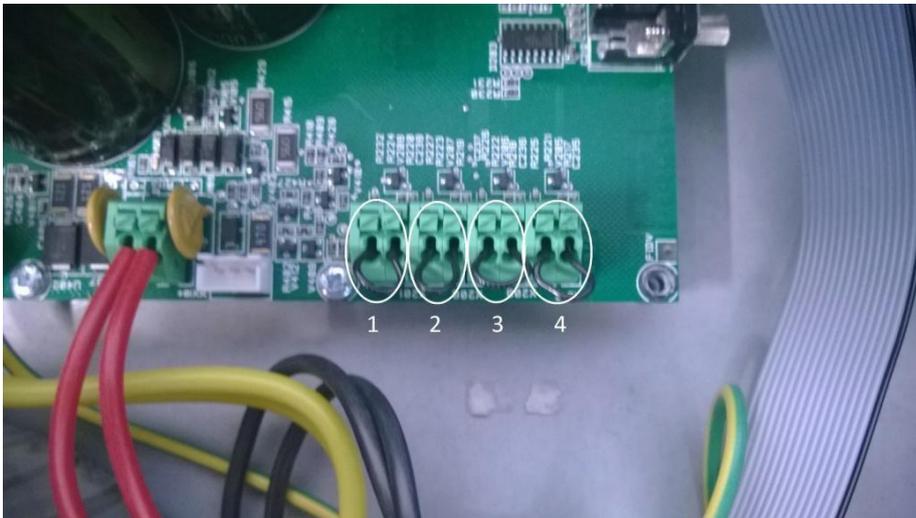
## Remote controlling the Emergency lights

In case that there are some Emergency lights lit along with the Exit lights:

Make sure that the Remote Control is not on (Picture 8.).

- Remote controlling the Emergency lights is operated with NC contact. If there is no remote controlling the lights, there is a loop in the terminals as shown in Picture 8.

- If there is a blackout or the remote control is on, the buttons in Centers display stops working. This is for as long as the blackout or remote control is on.



Picture 8. Remote controlling the ESC-200 Center. Input 1 controls Emergency lights in Loop 1, input 2 controls Emergency lights in Loop 2, inputs 3 and 4 controls all the emergency lights connected to the ESC-200 Center.

## Setting the luminaire location

Connect the panel to your PC.

Open EXIL2 software and choose the right port and language.

Press the read button. After the software has read all the addresses you can write or change the locations. Maximum letter is 16 in one location.

Write button write the locations to the panel.

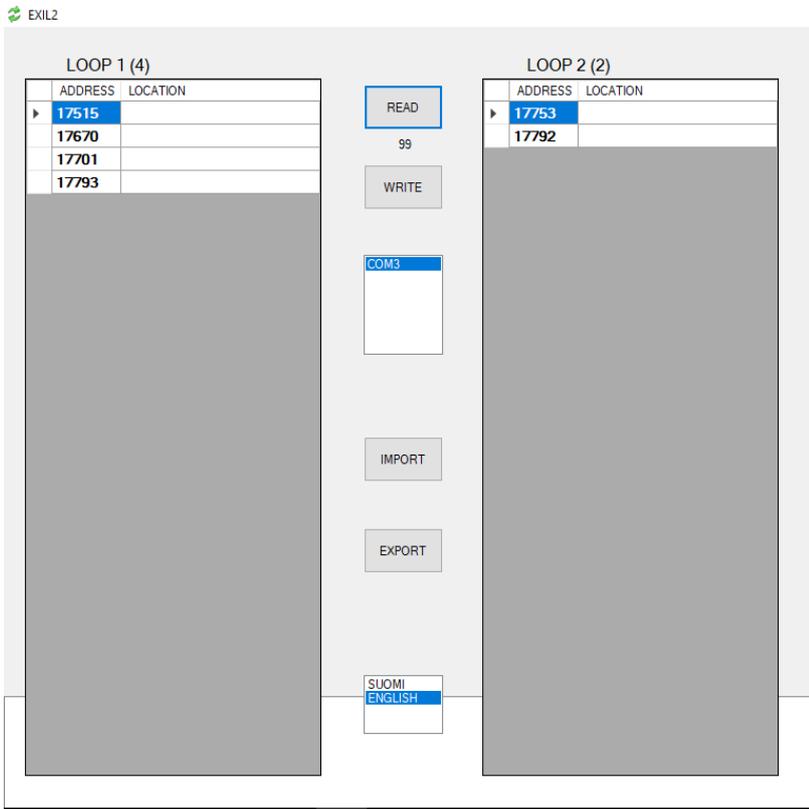
With import button you can bring file which include the addresses. The file must be written in the following way: every line has Loop information, address information, location information and it must be separate with comma. The file must be text file. For example:

```
Loop1,17515,Hall 1
Loop1,17670,Hall 2
Loop1,17701,Corridor
Loop1,17793,Garage
Loop2,17753,Garage2
Loop2,17792,Hall 3
```

With export button you transfer the text file to the panel.

After the panel has read the file, locations should be now in your panel. You can now

remove the port cable.



Picture 9. Luminaire location setting PC software.

## Working Principles of ESC-200

Data transfer protocol is called DC Power Line Communication

- The information runs in the same cable with the voltage

The Center is constantly checking the lights operating status

- The first error doesn't show up on the display. The Error Code shows up only if the same light/address gives the error ten (10) times.
  - o This is how we can reduce failures coming from other networks.
  - o There are no external signs about the Center checking the operating status.
- How long does it take to Error Code to show up on Centers display depends on how many lights you have in the system and how they are installed.
- The ESC-200 Center is constantly checking the batteries status by measuring their voltage.
- Checking the LEDs makes the Emergency light blink briefly about once a day.

The ESC-200 Center makes the battery test for the luminaires every month. The time and date can be set in section "Monthly test time".

- The Center makes the luminaires to work with batteries during the test. The voltage (65VDC) still remains in the line.
- The test lasts for 30 minutes and the Emergency lights light up during the test.
- The automatic testing cannot be turned completely off.

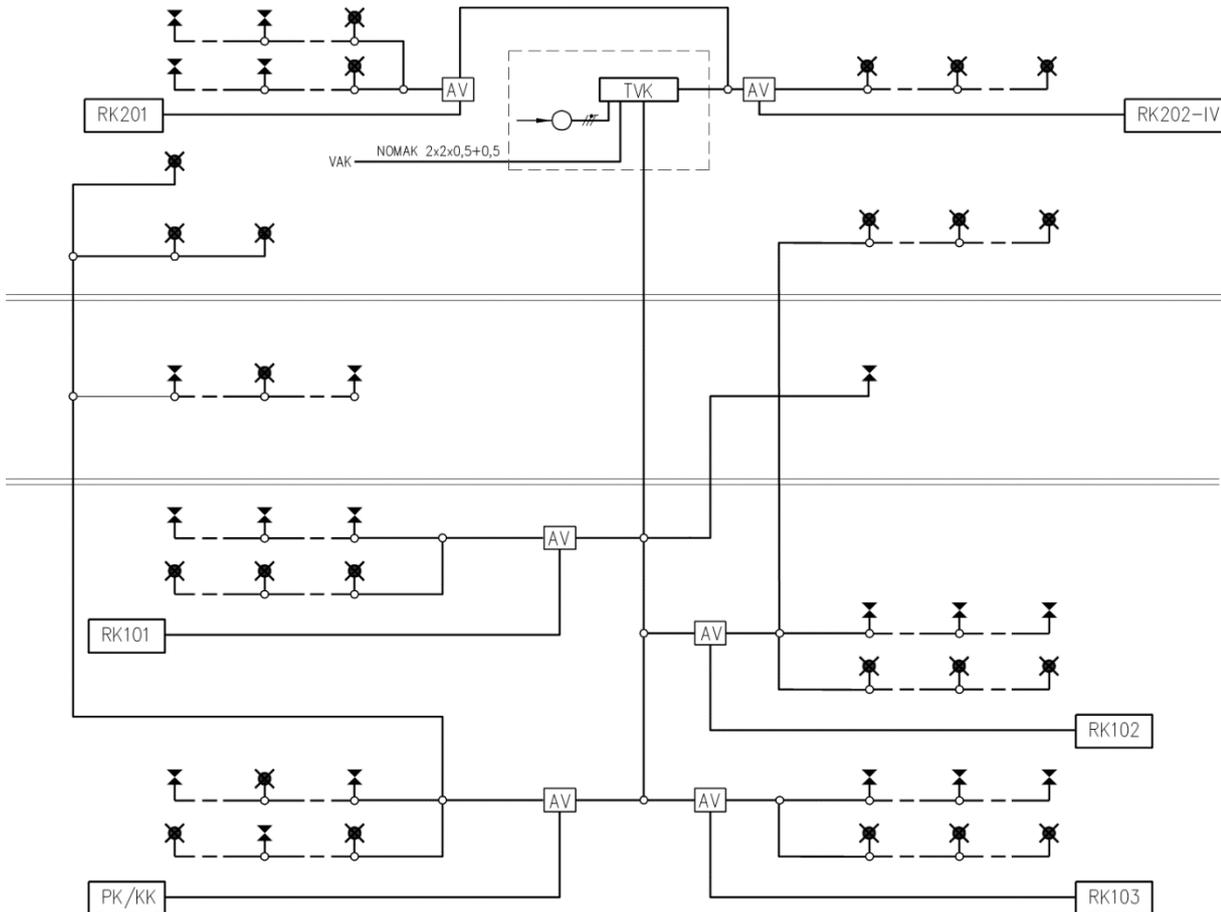
You can run the test also from the Center by choosing "Test 15min." (When the Center is in "Everything OK" mode push "SET" then "UP" and start the test by pushing "SET")

## ESC-200 design and cabling principles

To get the ESC-200 system to function as intended the cabling should be as follows:

- Always use shielded cable.
- Star coupling should be used. Do not connect all the luminaires in series.
- Keep the cable lengths as short as possible. The distance from panel to the last luminaire should not exceed 300m.
- Max. 100 pcs of luminaires in one line of the system.
- Place the luminaires to the lines as evenly as possible.
- If one line includes more than 80 pcs of luminaires, the max amount of cable in the line is 1000 m. Do not exceed this amount significantly even if you have less than 80 pcs of luminaires.
- If you want to place a luminaire far away from the panel you should use a branch without any luminaires on the way.
- Cable crimping should be kept to a minimum on luminaires and switch boxes.
- Always check the polarity (+ and -) and remember to connect the functional earth.
- If you are using Area Monitoring Units (AMU) please make sure that you have at least 5m of cable between AMU and the luminaires you want to control. This way the information between AMU and luminaires is transferred correctly.
- 2 Area Monitoring Units (AMUs) is comparable to one luminaire. So if you have 80 luminaires on line, maximum AMUs is 40 per line. (max 100 luminaire per line)

## Example cabling



- TVK is same as Control Panel ESC-200P
- Cabling FRHF
- AV is same as AMU

## Service and Maintenance

Service and maintenance of system has to be conducted by person with professional and knowledgeable person. Constant maintenance is needed in order to ensure the proper function of the system.

## Warranty

Warranty terms under the supplier's standard terms. In case of system faults always consult your sales representative:

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## ESC system error codes

**Table 1: Luminaires' errors**

ERROR	REMARK	ERROR CODE
Battery disconnected	Not to be noted in central battery use.	E01
Short circuit in battery	Not to be noted in central battery use.	E02
Led disconnected		E03
Short circuit in LED		E04
Battery condition fail	Not to be noted in central battery use.	E05
Battery failed during test.	Not to be noted in central battery use.	E08
Battery charging fail	Not to be noted in central battery use.	E07

**Table 2: Central panel errors**

ERROR	REMARK	ERROR CODE
Communication error	Error in the communication between luminaire and panel.	E14
Blackout	Not an actual error. Doesn't need to be set off. Is noted in the error log.	E15
Low control voltage	Control voltage drops, but doesn't cause a blackout.	E16
Loop 1 dead	Control voltage too low or fuse is broken.	E17
Loop 2 dead	See above.	E18
Earth leakage in loop 1		E19
Earth leakage in loop 2		E20
Excess current in loop 1	Overload in loop 1	E21
Excess current in loop 2	Overload in loop 2	E22
Inverter or battery fail	Inverter fail during test	E23
Inverter or battery fail	Battery fail during test	E24



# MANUAL

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