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SAFETY & SECURITY SYSTEMS
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Installation guide for
GR-6500
Addressable control panel for
Emergency luminaires

Contents

1. Operation instructions

Thank you for purchasing this product of Olympia Electronics, a European manufacturer.

This section contains general information and instructions about using the panel. **All users of the panel** should read these instructions very carefully in order to be able to act in an emergency situation or in a fault condition.

1.1. Description

The GR-6500 is a 16 zone addressable control panel for emergency luminaires that can connect with 250 devices. All the luminaires that are connected on the loop are displayed on the panel with the general term «POINTS». This term will be also used in the instructions below from now on.

1.2. Safety

A device is not considered that it is being used correctly if the accompanying documents are not read prior to its use. This product must be installed, commissioned and maintained by qualified technical personnel according to:

- Regulations referring to installing electrical devices in buildings
- The legislation requirements
- The manufacturer's instructions

1.3. Indications and Controls

The panel incorporates a Liquid Crystal Display (LCD) and a series of indication LEDs which are used to inform the user about the panel's status.
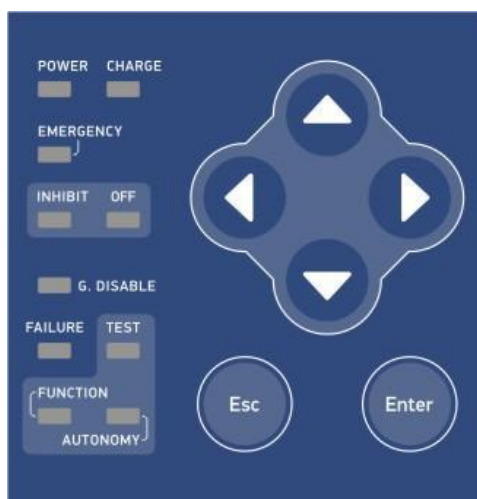

Figure 1-1

The indications of each LED from the figure above are:

- "POWER", is always on and flashes when the mains power of the panel is off

- "CHARGE", is on when all luminaires are charging

- "EMERGENCY", is on when any luminaire is in emergency mode

- "INHIBIT", is on when inhibit command is active

- "OFF", is on when off command is active

- "G. DISABLE", is on when any point is disabled

- "FAILURE", is on when there is (are) fault(s).

- "TEST", is on when at least one luminaire is currently on a function or autonomy test

- "FUNCTION", is on when at least one luminaire is on a function test

- "AUTONOMY", is on when at least one luminaire is on an autonomy (capacity) test

There are also LEDs below the screen, which indicate fault events:

- "FAULT BATTERY" led is on when there are faults concerning the battery (disconnected or overcharged etc.)

- "FAULT SUPPLY" led is on when there are faults concerning mains power

- "FAULT SYSTEM" led is on when there are faults at the system/microcontroller

- "FAULT ZONE" led is on when there are faults in a zone

- "FAULT OUT" led is on when there are faults in the OUT signal

- "FAULT POINT" led is on when there is a fault at any point/luminaire

On the right side of the display there is a keyboard containing six keys, used for operating the panel. The keys correspond to the functions left, right, up, down, Enter (select), Escape (exit or go to previous level). The "Enter" key is used to accept a selection (enter a submenu) and the "Esc" key is used either to exit or go to a previous level. The direction keys are used to move (up/down/left/right) between the options.

1.4. General LCD indications

A typical main screen of the panel GR-6500 is shown below.

Figure 1-2

The LCD is divided is four sections. The first section is the current mode of the panel. The modes can be:

- "CHARGING" all the luminaires are in charging mode

- "EMERGENCY" at least one of the luminaires is in emergency mode

- "FUNCTION TEST" a function test is running

- "CAPACITY TEST" a capacity test is running

- "INHIBIT" inhibit mode is active

- "OFF" off command is active

The second section indicates the status of the panel. The panel can be in normal state or in fault state either. If any fault is found it's displayed on this section. An update is made every few seconds to display all faults. On the figure below you can notice that the panel is in fault state and there is a lamp fault at "POINT 1" too.

Figure 1-3

The third section displays information concerning the installation, including:

- Total points installed

- How many luminaires are in emergency mode

- How many luminaires are currently on a function or a capacity test

- How many points are disabled

- How many are the current faults

The last section shows the time and date of the panel.

2. User Menu

By pressing "Enter" you have access to the user menu of the panel. There is a general diagram of the user menu options below.
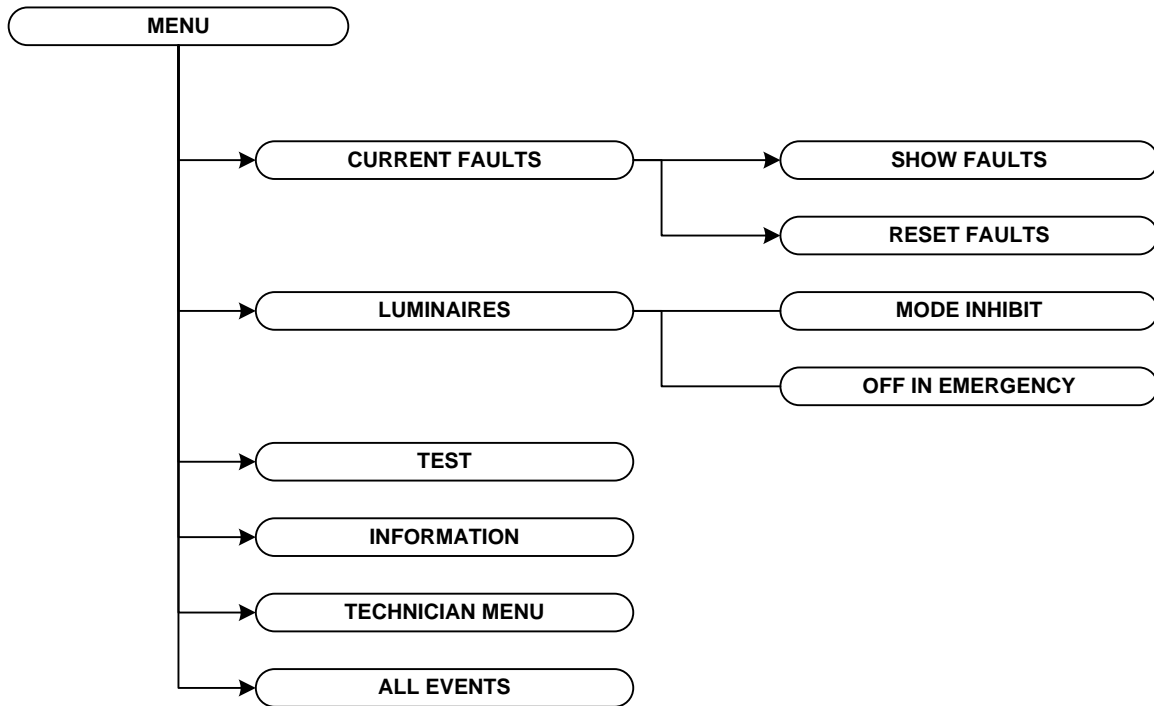

Figure 2-4

The first option "CURRENT FAULTS" appears only if there are faults in the panel. By pressing "ENTER" you have two options, "SHOW FAULTS" and "RESET FAULTS" (see figure below).

Figure 2-5

With keys "UP" and "DOWN" you can move to the option you want to choose. Press "ENTER" to enter menu or "ESC" to go to previous.

By selecting "SHOW FAULTS" you can see all the faults on the panel at this moment. With Up and down you can move among faults. An example is shown in figure 2-3.

Figure 2-6

The last line shows the index of the fault and the number of all faults.

By pressing the "RESET FAULTS" the panel deletes and resets all faults.

The next option "LUMINAIRES" sends commands to the luminaires connected to the panel. The option "MODE INHIBIT" enables/disables the inhibit function of all the luminaires connected to the panel. If inhibit function is enabled the luminaires will not light when the mains power fails.

During emergency mode the option "OFF IN EMERGENCY" appears. This option turns off all emergency luminaires but only for that time. At the next time mains power fail the luminaires will light normally.

In order to enter "TECHNICIAN MENU" you need to know the "tech code" (password). There will be more information about this menu in the next chapter.

2.1.   Test menu
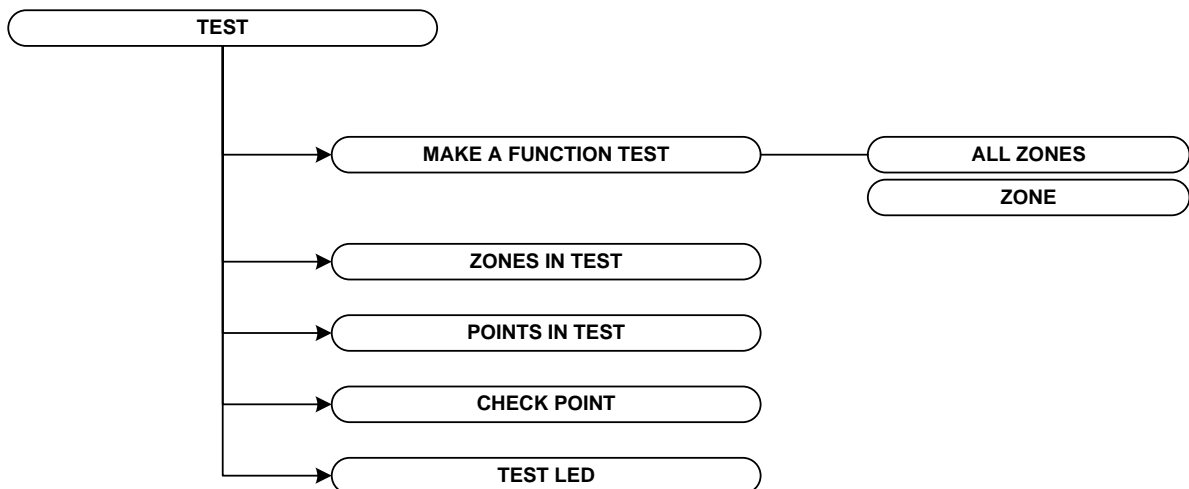
The option "TEST" shows the submenu below:

Figure 2-7

- To make a function test of all luminaires or a specific zone choose "MAKE A FUNCTION TEST"

- "ZONE IN TEST" shows which zones are on a function or autonomy test

- "POINTS IN TEST" shows which points are on a function or autonomy test

- "TEST LED" this option turns on all indication LEDs to detect any malfunction (of the leds)

- "CHECK POINT" this option you can check the communication and the data of each point

   See the picture below

Figure 2-8

The current address can change from "UP", "DOWN" keys.

The line below shows the number of the good and bad packet communications.

If the communication with the luminaire is good the specifications of each point is displayed. For example, in figure 2-5 you can see the type of the luminaire, voltage of the battery (VBAT), software version of the luminaire (VER), lamp current (ILAMP) and battery charge current (ICHARGE).

If you press "RIGHT" the LCD shows possible faults the luminaire, like, "LAMP" (lamp fault), "AC" (main power absent), "CHARGER" (charger fault), "BAT" (battery fault), "CAP" (autonomy fault), "CUT OFF" (battery cut off).
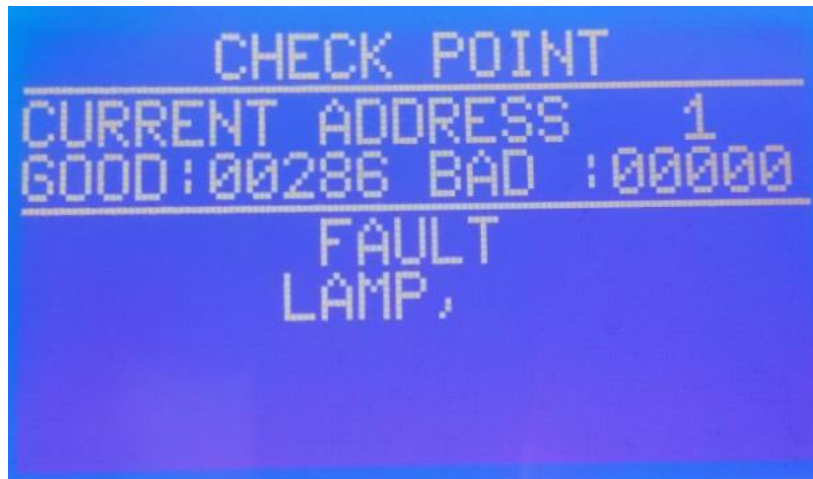
Figure 2-9

Press one last time the "RIGHT" key to see the last flag of the luminaire like, function test, capacity test, inhibit mode, if the battery is fully charged and the last autonomy in minutes.
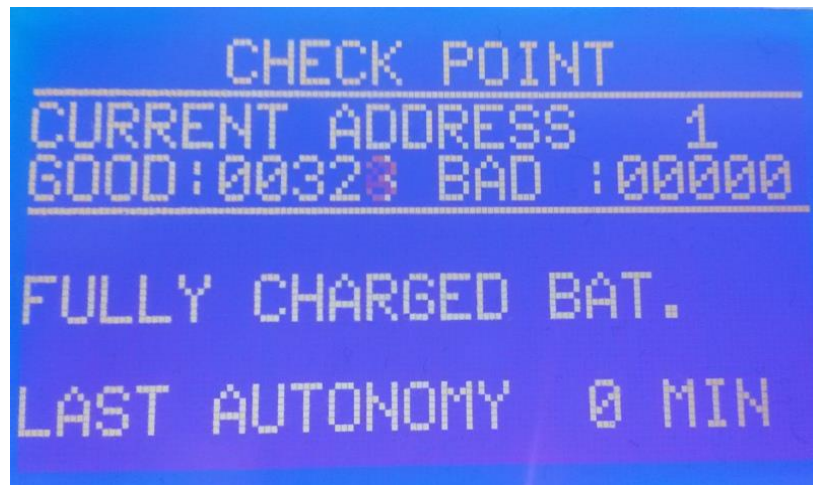

Figure 2-10

If you press "ENTER" you can send commands to this specific luminaire. The commands are shown at the next picture.
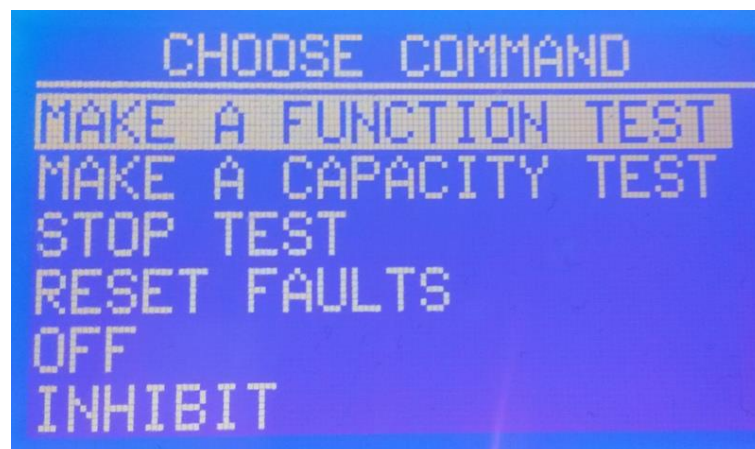

Figure 2-11

2.2.   Information menu
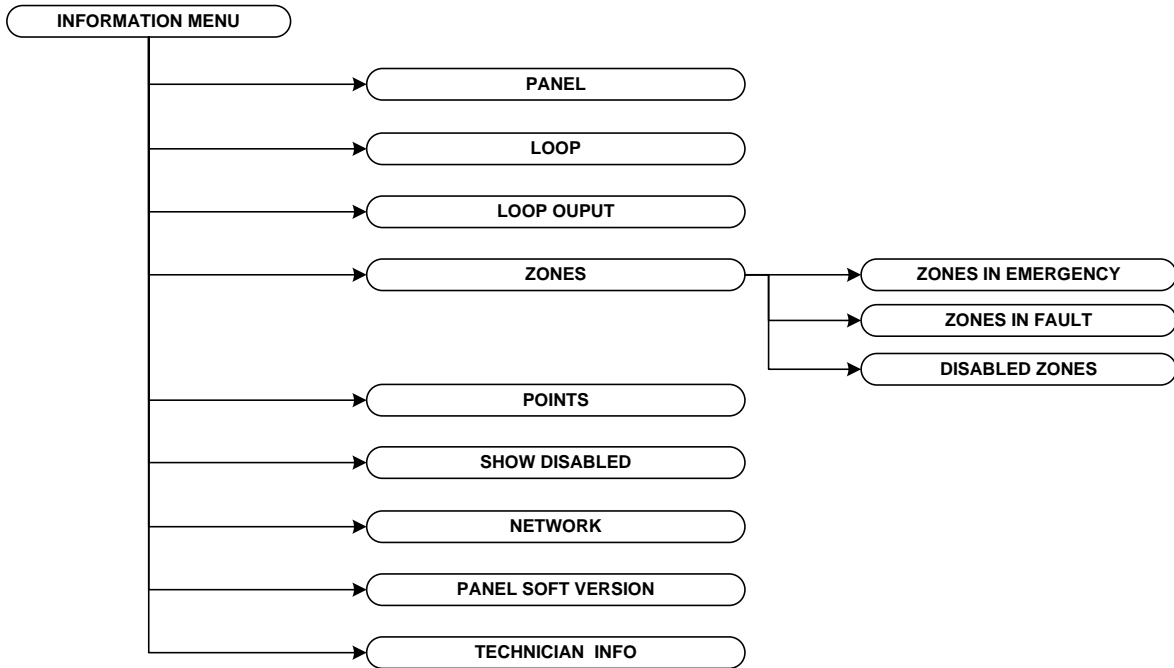
In the information menu the options are:

Figure 2-12

- "PANEL" shows information about mains power supply, battery and the charger

- "LOOP" shows information about loop points, voltage etc

- "LOOP OUTPUT" displays the voltage of the four outputs of the loop

- "ZONES" shows which zones are in emergency, disabled or have faults

- "POINT" shows the configuration of each address. With UP/DOWN keys you can scroll between addresses

- "SHOW DISABLED" shows the points/luminaires that are disabled

- "NETWORK" shows information about the Ethernet module (IP and MAC address)

- "PANEL SOFT VERSION" shows the software version of the panel and the loop

- "TECHNICIAN INFO" shows information concerning the technician

2.3.   Events menu

In this menu you can have access to the event log of the panel. The event log has capacity up to 250 events.

Figure 2-13

At the screen above you can see a typical event. The first line shows the type of the event FAULT, or GENERAL (information). The second line shows the source of the event for example PANEL, POINT 230 (point at address 230). The third line shows a description of the event, for example "NOT REGISTERED" means that the panel has detected a point at this address which is not recorded in its memory.

The next line shows the time and the date the event occurred and the last line shows the index of the event.

Explanation of the fault event description and the action that has to be done by a user or technician is shown below:

- "SHORT CIRCUIT" a short-circuit occurred at the source of the event. Check for any short-circuit at the source.

- "DISCONNECTED BATTERY" the battery is disconnected. Check the cable of the battery to the panel.

- "DISCONNECTED" the point at this address is not communicating with the panel. Check the communication cables and the point at this address if they have any connection problems.

- "NOT REGISTERED" the point at this address is not recorded in the memory of the panel. The point must be registered to the panel.

- "CONFLICT DATA" the technician must check if there are two points or more with the same address.

- "DATE-TIME NOT SET" the user must set the time and the date of the panel.

- "LAMP FAULT" the lamp of the luminaire at this address is faulty. Replace the lamp or check the lamp cables of the luminaire for damages.

- "BATTERY CAPACITY" the battery of the luminaire at this address has low capacity. The technician must replace the battery of the luminaire.

- "LUMINARY COMM." the adaptor at this address does not communicate with the luminaire. The technician must check if the adaptor is not correctly placed and if the luminaire is not working.

- "WRONG LUMINARY" the saved type of luminaire at the memory is different from the actual type.

3. Installation instructions

Connections between the control panel and the luminaire modules is consisted of a 2 core twisted pair cable.

The figure below shows the interior of the panel and the keyboard.
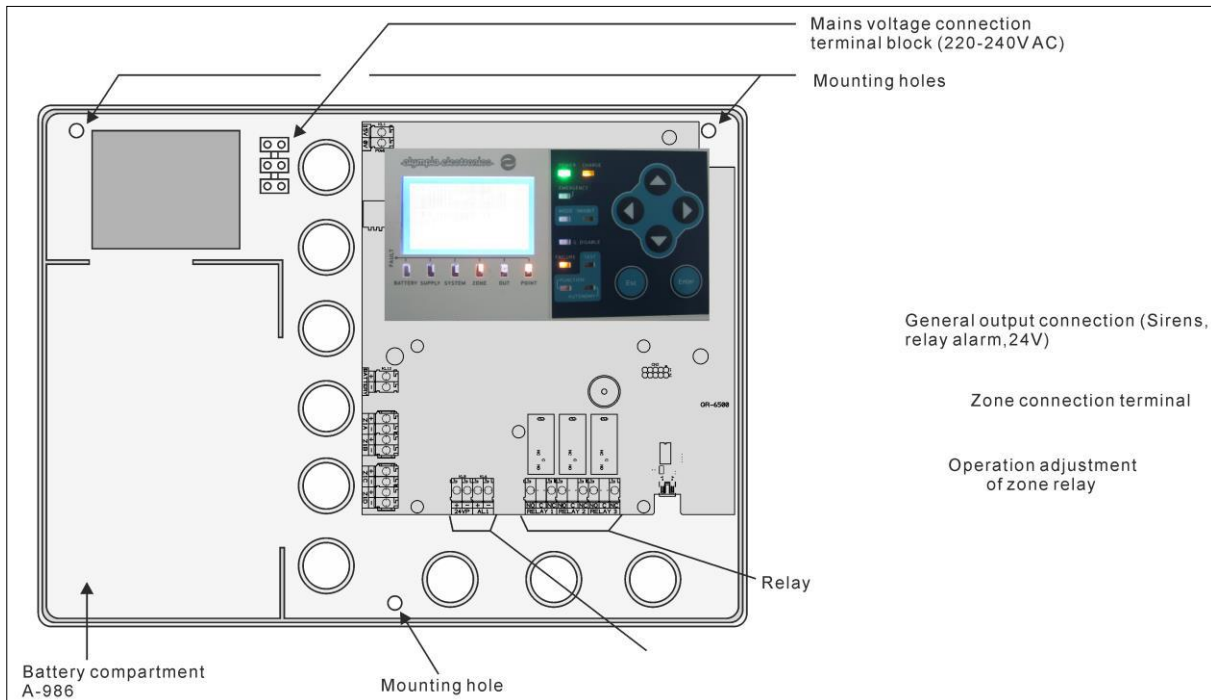
Please install the panel in a clean and dry environment with an ambient temperature of between 5°C and 35°C. The panel uses for backup power a lead acid battery.

3.1. Choosing the correct cable

The cable between the panel and the GR-6057 modules must have the following specifications:

1. 2-core twisted pair cable. Normally the cables are unshielded but if the cable passes near noisy/industrial environment the cables must be shielded.

2. The cable must have only 2 cores and the shield, no other cables.

3. The cable must have low resistance, below 25 Ohm/km. The total impedance of the cable of each core from start to finish must not be more than 20 Ohm.

4. The capacitance of the cable must be low (below 200pF/m). The total capacitance of the whole installation must not exceed 800nF.

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Olympia Electronics recommends the following cables:

1. YSLY-OZ

2. LiYCY

Typical cable cross section is from 0.75mm2 to 2.5mm2 depending on the number of connected luminaires, topology of the installation and length of cable runs.

3.2. Topology of the installation

The maximum number of luminaires connected to the panel is 250. The panel has 4 outputs Z1A, Z1B, Z1C and Z1D.

The ideal connection is a **loop connection topology between the above outputs**. For example, the installation can start from Z1A and finish at Z1B, with the maximum number of luminaires connected being 150 per loop. Please see the following diagram.
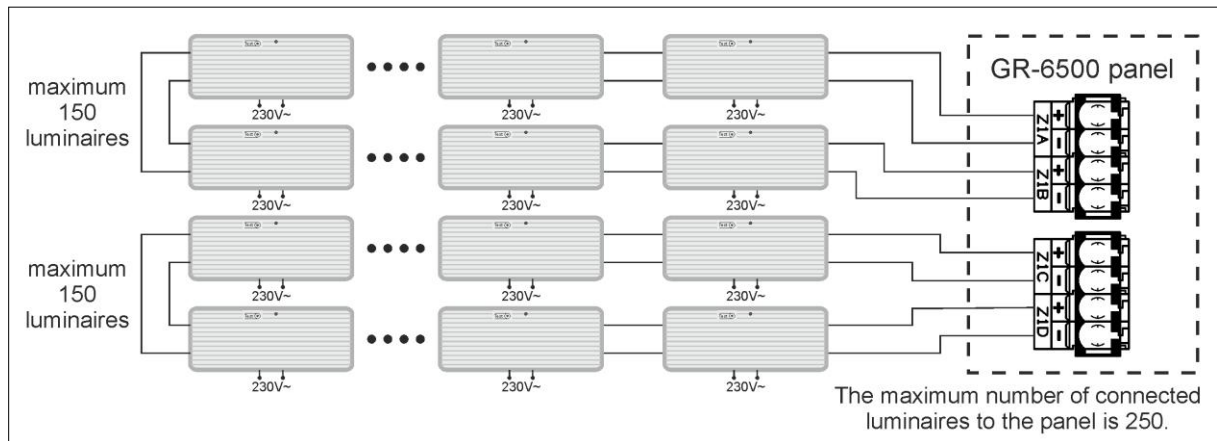
3.3. Addressable luminaries

The luminaries that are compatible (communicates) with the panel are:

A/A	Name
1	GR-360/ADR
2	GR-362/ADR
3	GR-364/ADR
4	GR-421/3L/ADR
5	GR-421/3L/M/ADR
6	GR-421/6L/ADR
7	GR-423/3L/ADR
8	GR-423/6L/ADR
9	GR-423/24L/ADR
10	GR-421/24L/ADR

11	GR-421/3L/1/ADR
12	GR-421/6L/1/ADR
13	GR-423/3L/1/ADR
14	GR-423/6L/1/ADR
15	GR-421/3L/1/M/ADR
16	GR-427/12L/ADR
17	GR-736/21L/ADR
18	GR-119/L/ADR
19	GR-315/4P/ADR
20	GR-315/6P/ADR
21	GR-316/6P/ADR
22	GR-316/4P/ADR
23	GR-315/15L/ADR
24	GR-315/30L/ADR
25	GR-316/15L/ADR
26	GR-316/30L/ADR
27	GR-938/4P/ADR
28	GR-938/6P/ADR
29	GR-939/4P/ADR
30	GR-939/6P/ADR
31	GR-938/15L/ADR
32	GR-938/30L/ADR
33	GR-939/15L/ADR
34	GR-939/30L/ADR
35	GR-576/L/ADR
36	GR-1009/24L/ADR
37	SLD-28/ADR
38	SLD-34/ADR
39	SLD-44/ADR
40	SLD-64/ADR
41	ZLD-28/ADR
42	ZLD-34/ADR
43	ZLD-44/ADR
44	GR-638/ADR
45	GR-639/ADR
46	GR-312/6P/ADR
47	GR-312/4P/ADR
48	GR-312/30L/ADR
49	GR-312/15L/ADR
50	GR-310/6P/ADR
51	GR-310/4P/ADR
52	GR-310/30L/ADR
53	GR-310/15L/ADR
54	GR-316/ADR
55	GR-312/ADR
56	GR-1938/15L/ADR

57	GR-1938/30L/ADR
58	GR-1938/4P/ADR
59	GR-1938/6P/ADR
60	GR-1939/15L/ADR
61	GR-1939/30L/ADR
62	GR-1939/4P/ADR
63	GR-1939/6P/ADR
64	GR-1316/30L/ADR
65	GR-290/ADR
66	GR-291/ADR
67	GR-290/250/ADR
68	GR-291/250/ADR
69	GR-292/ADR
70	GR-293/ADR

Also all future luminaries that named xx-yyy/zzz/ADR (they have /ADR at the end).

3.4.   Cross cable selection

The devices are powered from the GR-6500 panel, which has a maximum supply current of 250mA. So it is necessary to calculate the maximum current of the installation, which must not exceed the limit of 250 mA. The total loop current of the installation is calculated by adding the total current consumption of each device in normal operation.

If in any condition we exceed the current limit of 250mA, we must install a second GR-6500 panel to create a network. The devices will be divided into two panels.

Furthermore, an essential magnitude of the cable loop is the cross-section, because the cable resistance depends on the cross-section. If the cable's resistance is high there will be a voltage loss and the device may not work properly. The next table shows the minimum cross-section in conjunction with the cable length and with panel supply current.

The maximum permitted loop length is 2 km measured.

Length of cable / Luminaires	200m	500m	1000m	1500m	2000m
50	0.75 mm^2	1 mm^2	1 mm^2	1.5 mm^2	2.5 mm^2
100	1 mm^2	1 mm^2	1.5 mm^2	1.5 mm^2	2.5 mm^2

150	1.5 mm^2	1.5 mm^2	2.5 mm^2	2.5 mm^2	2.5 mm^2

The installation must obey the rules below:

1. The cables must have a distance more than 40 cm away from any mains cable (230 VAC)

2. The cables must have a distance more than 5 meters away from motor/power stations.

3.5.   Useful information for panel installation

Please follow the steps below for every installation of a GR-6500:

1) First, you must set the address of each device. To change it, set the dip-switch accordingly, which is located on the upper side of each luminaire module.

2) It is essential to draw a schematic of the complete installation. The schematic must include cable length, cable cross-section, and the location of each device. This will be useful to locate where a fault or a shortcut occurs.

3) If the installation is in an industrial place or the loop passes near a motor, or ballasts or other devices which does not comply to CE in radiation activity, then a shielded cable is needed.

4) Always observe polarity throughout.

5) Non color coded conductors should be identified (e.g. with labels).

6) Before we connect the cable we must check for three common faults
    a) Shortcuts (with the help of a multimeter),
    b) Reverse polarity of the cable loop
    c) Open or short circuit of loop cable (with the help of a multimeter).

3.6.   Network connection

The GR-6500 panel can be connected to a Local Area Network via Ethernet and can be accessed remotely via a PC and a common web browser. The Ethernet network connectivity, is provided by the GR-8530 Ethernet card (10BASE-T controller) (optional accessory - contact your sales representative). Connect the panel to network via the RJ45 connector on bottom right corner (interior).

Set the IP (IPv4) Address of the panel before connecting it to the Local Area Network, via TECHNICIAN MENU > NETWORK > IP ADDRESS. Then you can access the panel for monitoring and control, via a common web browser (see chapter 5. for more info).

3.7.   Relay operation

The panel has 3 relay contacts to connect them to a BMS. Each relay has been programmed for a certain operation, described below:

- Relay 1: Activated when the panel is active/working.

- Relay 2: Activated when the panel is in emergency mode.

- Relay 3: Activated when there are not any faults in the panel.

3.8.   USB connection

At the right bottom corner of the panel PCB there is a mini USB-B connector. This USB is used for communication between the panel and the software PC GR-6500. You can update the firmware of the panel by using the software too.

3.9.   Other connections

Connecting the battery and the mains power supply:
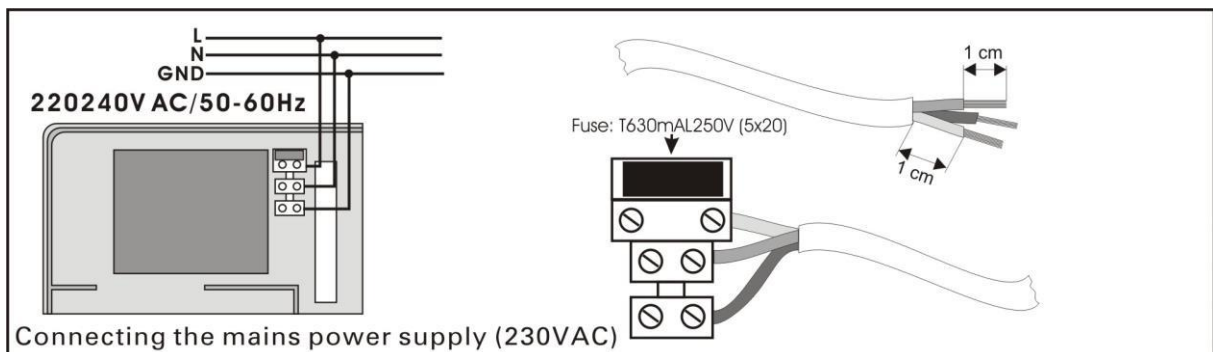
For the battery there are two cables, red and black for connecting to the positive and negative pole respectively.

Finally there are two outputs 24VP and OUT. The 24VP is an output 24 VDC. The OUT gives 24VDC when the panel is in test mode.

Please follow the general guidelines bellow for any installation:

- External cables must be connected using the cable entries or knockouts provided.

- When routing external cables inside the panel they must be kept as short as possible

- Cables must be routed close to the housing

- Cables must be kept as far as possible from the electronics in the panel

4. Technician menu

To enter the technician menu you must press "Enter" from the main screen, then select the option "TECHNICIAN MENU". Then you must enter the technician code. The default code is **1000**. You can see a figure of the enter code screen below. With Up-Down keys you change the digit, Right-Left keys you move to the next digit.

```
ENTER TECH CODE


   ┌─────────┐
   │ - - - - │
   └─────────┘
```
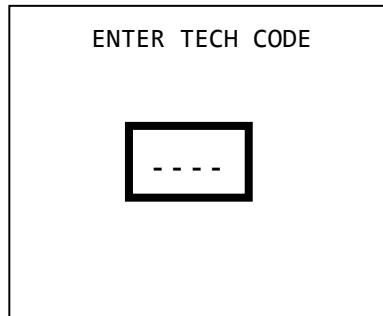
If the code is correct you enter the technician menu which has the following options:
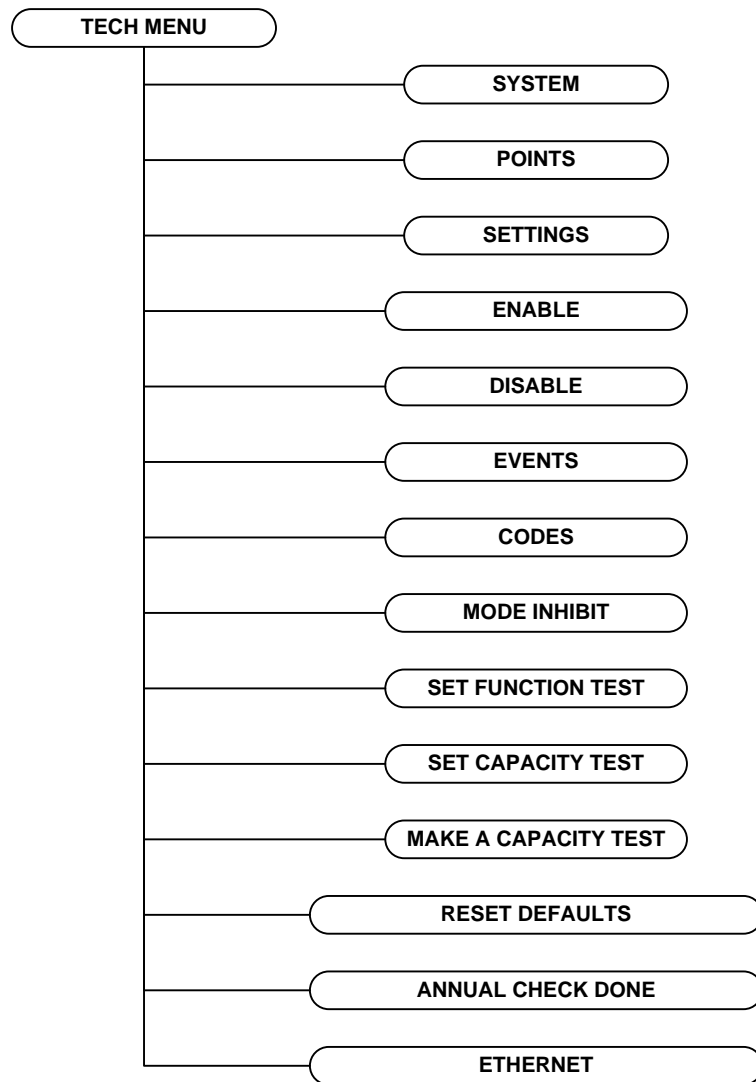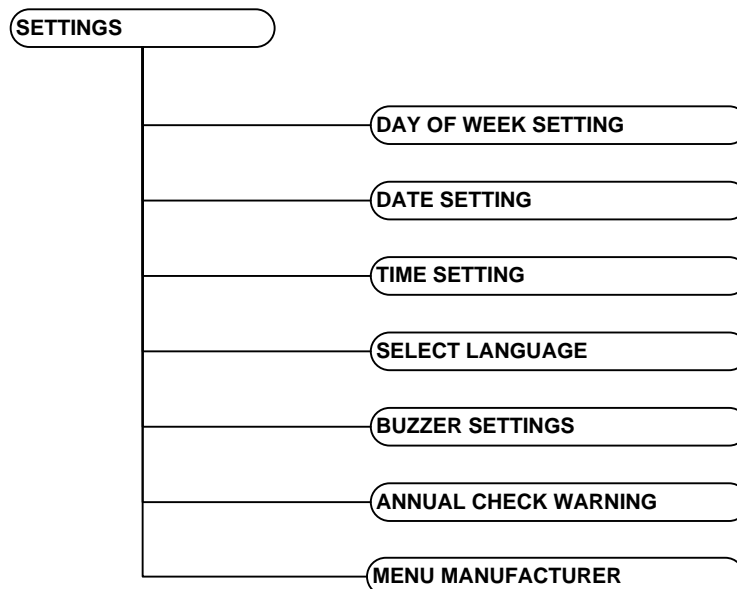

Figure 4-14

- "SYSTEM" where you can automatically setup (register) all points of the loop

- "POINTS" configure each point of the panel

- "SETTINGS" configure parameters of the panel. See paragraph 4.1.

- "ENABLE" a point, a zone, all zones.

- "DISABLE" a point, a zone, all zones.

- "EVENTS" to clear event log.

- "CODES" to change the technician code.

- "MODE INHIBIT" set permission to the panel of using the inhibit mode.

- "SET FUNCTION TEST" configures when the function test takes place. See paragraph 4.2

- "SET CAPACITY TEST" configures when the capacity test takes place. See paragraph 4.3

- "MAKE A CAPACITY TEST" makes or stops a capacity test.

- "RESET DEFAULTS" loads the factory settings.

- "ANNUAL CHECK DONE" the annual check from the technician was made.

- "ETHERNET" configure Ethernet module. See paragraph 4.4.

4.1. Menu Settings

The menu settings has the options bellow:

Figure 4-15

- "DAY OF WEEK SETTING" set the day of the week

- "DATE SETTING" set the date of the panel

- "TIME SETTING" set the time of the panel

- "SELECT LANGUAGE" choose language between GREEK and ENGLISH

- "BUZZER SETTINGS" set buzzer on/off

- "ANNUAL CHECK WARNING" enable/disable the annual check warning

- "MENU MANUFACTURER" you need the code of the manufacturer to access this menu

4.2.   Function test menu

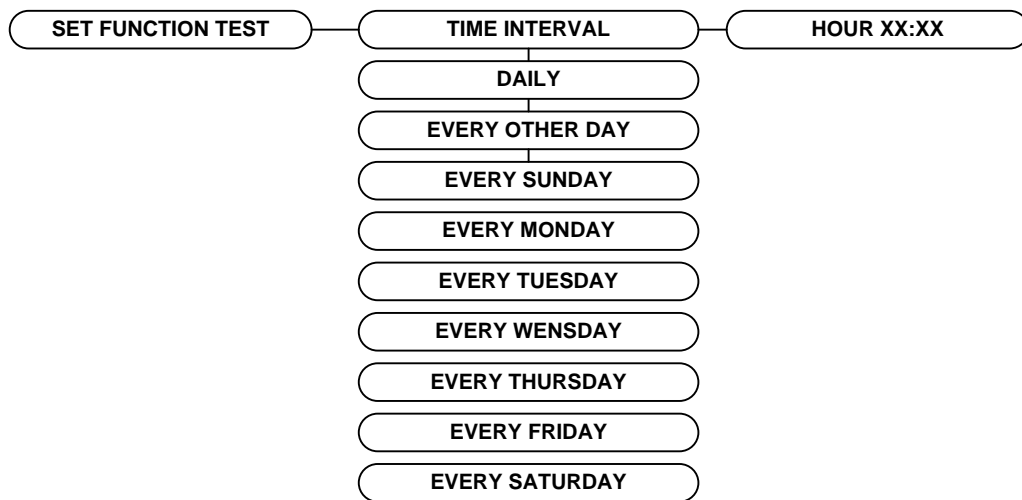The menu "SET FUNCTION TEST" has the options below:

Figure 4-16

First you choose how often the function test takes place, from daily to once a week and then you choose the exact time.

At the function test the panel will send a command to every luminaire to make a function test. After the test all faults will be displayed at the panel.
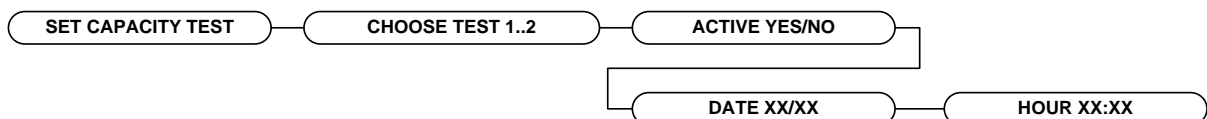
4.3.   Capacity test menu

Figure 4-17

At the figure above you set when the capacity tests take place in a year. In every year the maximum number of capacity test is 2.

It is recommended that the panel takes two capacity tests per year, once every 6 months.

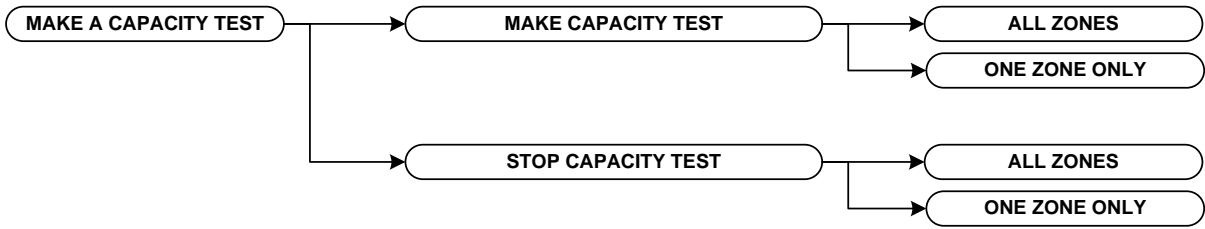A technician can start a capacity test by selecting the option "MAKE A CAPACITY TEST".

Figure 4-18

It is also possible to stop a capacity test from the same menu (see figure above).

4.4. Ethernet menu
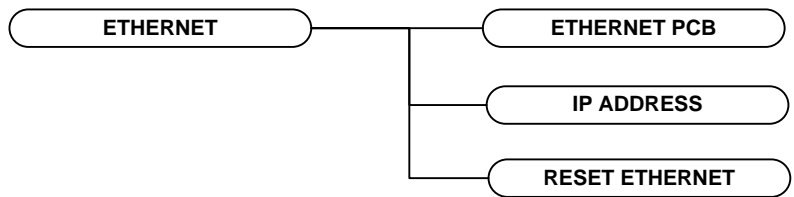
At the Ethernet menu you can set the Ethernet parameters

Figure 4-19

- "ETHERNET PCB" check if the pcb is present or not

- "IP ADDRESS" set the IP address of the panel

- "RESET ETHERNET" reset the Ethernet module

5. PC - Visualising via web browser

You can monitor and control the panel from any device (pc, mobile etc) and from any OS with the use of an internet browser. No special software is necessary. A connection of the system with the local network via standard network cable with RJ45 interface is required.

The IP address of the system is entered in the address bar of the browser (e.g.: http://10.0.1.152). The IP address can be found at menu INFORMATION → NETWORK. See the main screen bellow.
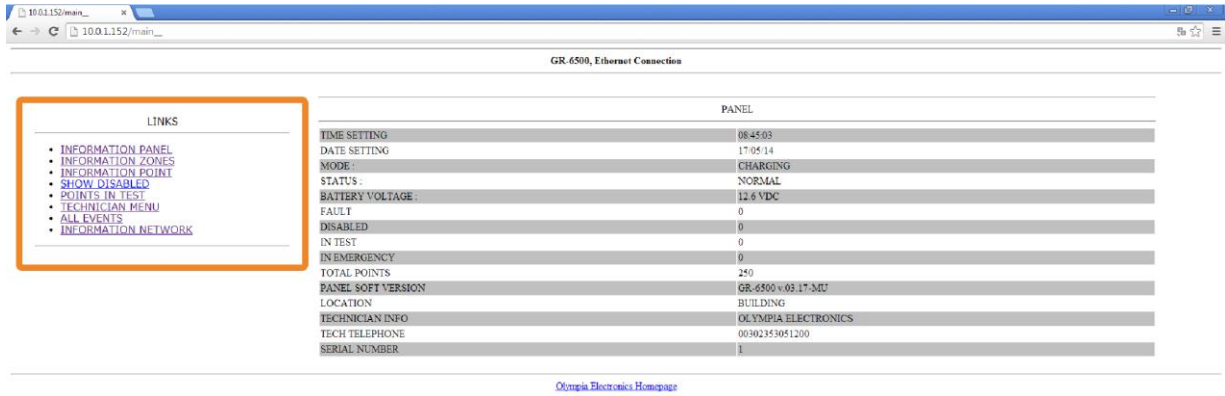

Figure 5-20

The menu and functions are exactly the same as it is shown the panel. The interface is best displayed via Chrome web browser.

Access to the panel can be local via local LAN/WiFi or from anywhere through the internet. To access the panel through the internet you must setup a port-forward, from your router, of the IP panel.

6. Technical Characteristics – Specifications

Description	GR-6500
	1 loop 16 zone adressable luminaire panel
Power Supply	220-240VAC/50-60HZ
Consumption	25W (0.150A AC)
Battery type	Sealed lead acid (Pb) battery 12V / 7Ah Max
Charger	Stabilized power supply 13,8V / 400mA
Loop circuit	The maximum number of addressable modules connected to the panel is 250.
24V output	General outputs with a 24VDC 300mA rating.
Output Relay	3 relay outputs with volt-free contacts (NC,C,NO).
Maximum load	The maximum load connected to the panel must not exceed 0.6A.
Degrees of cover protection	IP 30
Humidity	Up to 95% relative humidity
Constructional material	ABS/PC, PC
Dimensions	322 x 241 x 97 mm
Weight	1400 gr
Produced in accordance with	EN 50172, EN50130-4, EN 61000-6-3
Guarantee	2 years