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OBSTAFLASH HI LED LIGHTING SYSTEM

INSTALLATION AND OPERATION GUIDE

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DESCRIPTION	COLOR	POWER SUPPLY	P/N
High intensity type A 120° + 2m of cable + stainless cabinet	**white**	120-230 V – 50/60Hz	113780
Fault transmitter card (inside each stainless cabinet of light, only used with HI controller SS122)			113749
Photocell day/twilight/night SS124			113130
HI controller SS122			113625

Instead of HI controller SS122, GSM interface and optical network can be proposed for synchronization and remote control (see page 22 and 23).

BE CAREFUL

Led projectors in this lighting system Produce brilliant flashes of light which can result in temporary or permanent eye damage. **DO NOT LOOK DIRECTLY AT THE PROJECTOR WHILE IT IS IN OPERATION.**

WARRANTY

OBSTA warrants the equipment described in the instruction manual and sold to purchaser to be free from defects in material and workmanship at the time of shipment. OBSTA's liability under this warranty being limited to repairing or replacing, at OBSTA's option, items which are returned to it prepaid within twenty four (24) months from shipment to the original Purchaser, or twelve months from commissioning, and found, to OBSTA's satisfaction, to have been defective. In no event shall OBSTA be liable for consequential damages. NO PRODUCT IS WARRANTED AS BEING FIT FOR A PARTICULAR PURPOSE AND THERE IS NO WARRANTY OF MERCHANTABILITY. This warranty applies only if: (I) the items are used solely under the operating conditions and in the manner recommended in OBSTA's instruction manual, specifications, or other literature; (II) the items have not been misused or abused in any manner or repairs attempted thereon; (III) written notice of the failure within the warranty period is forwarded to OBSTA and the directions received for properly identifying items returned under warranty are followed; and (IV) such return notice authorizes OBSTA to examine and disassemble returned products to the extent OBSTA deems necessary to ascertain the cause of failure. The warranties stated herein are exclusive. THERE ARE NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, BEYOND THOSE SET FORTH HEREIN, and OBSTA does not assume, nor does OBSTA authorize anyone else to assume for it, any other obligation or liability in connection with the sale or use of said products. OBSTA's liability on any claim of any kind, including negligence, for loss or damages arising out of or connected with the manufacture, sale, delivery, repair or use of any equipment or services provided by OBSTA shall in no case exceed the price allocable to the item or service or part thereof which gives rise to the claim.
The integrity and reliability of OBSTA aviation obstruction lighting systems is dependent on the use of OBSTA parts and components. To ensure the optimum performance and reliability of your OBSTA system, it is strongly advised that only components and modules manufactured by OBSTA be used.

NOTICE

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WARNING!

Modifications to the Power Supply are required for certain applications. Documentation to describe these changes may be found at the end of the manual.

SECTION 1.0 - GENERAL INFORMATION

1.1 Scope

This manual provides information about the installation, operation, and maintenance of the OBSTAFLASH HI Led High Intensity Obstruction Lighting Systems manufactured by OBSTA. The lighting systems described in this manual are ICAO High intensity type A, for use as high intensity aviation obstruction warning systems.

1.2 General Description

The OBSTAFLASH HI Lighting System is led high intensity systems manufactured to comply with ICAO annex 14 chapter 6. Each system consists of 1 beacon covering 120° in azimuth, an associated power supply with integrated controls, an ambient light sensor (photocell) and the interconnecting cable. System components are shown in Figures 1-1, 1-2 and 1-3 pages 5 to 7.

The OBSTAFLASH HI beacon consists of 8 led projectors made in hard glass and aluminum, and a stainless bracket. Each projector includes 2 white led circuits working in active redundancy: in case one circuit is out of work, the second one keeps on working in the same azimuth, a remote alarm is activated and related luminous indicator goes red.

The stainless power supply contains:

- 8 modular power cards (1 per led projector) that regulate the current in 2 led circuits
- 2 command cards A and B to monitor the 8 power cards. The command cards do have :
    - 1 luminous indicator per set of power cards/projector D6 to D11: command card A do have 6 power cards and command card B do have 2 power cards.
    - 1 luminous indicator D14 for synchronization signal received from the controller or other interface,
    - 1 luminous indicator D13 for synchronization failure in case no signal is received
    - 1 luminous indicator D15 for general alarm
- all related power circuit (surge protection, switch, DC power, test buttons)
- a main switch and an AC power indicator.

The S1 test button in figure 1-1-a page 5 and photo 1-1-b page 6 allows 2 positions:

- “Up”: remote position, the light is in normal operation and controlled by the controller
- “Middle”: the light are forced in “day” or “twilight” or “night” mode according to S2

The S2 test button in figure 1-1-a page 5 and photo 1-1-b page 6 allows 3 positions:

- “Day” position, the light is forced in day mode
- “Twilight” position, the light is forced in day mode
- “Night” position, the light is forced in night mode.

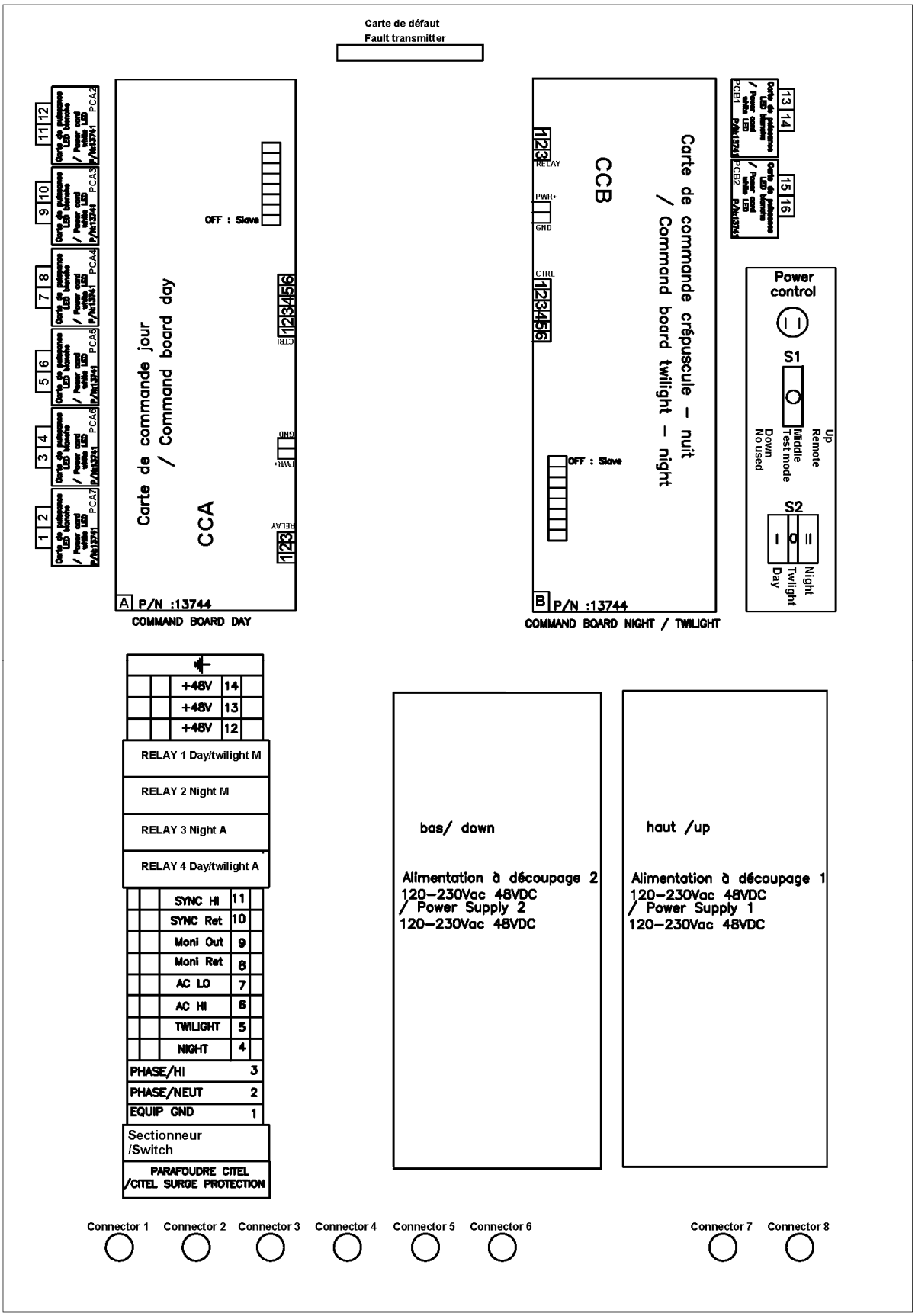


Figure 1-1-a. POWER SUPPLY COMPONENT LOCATIONS

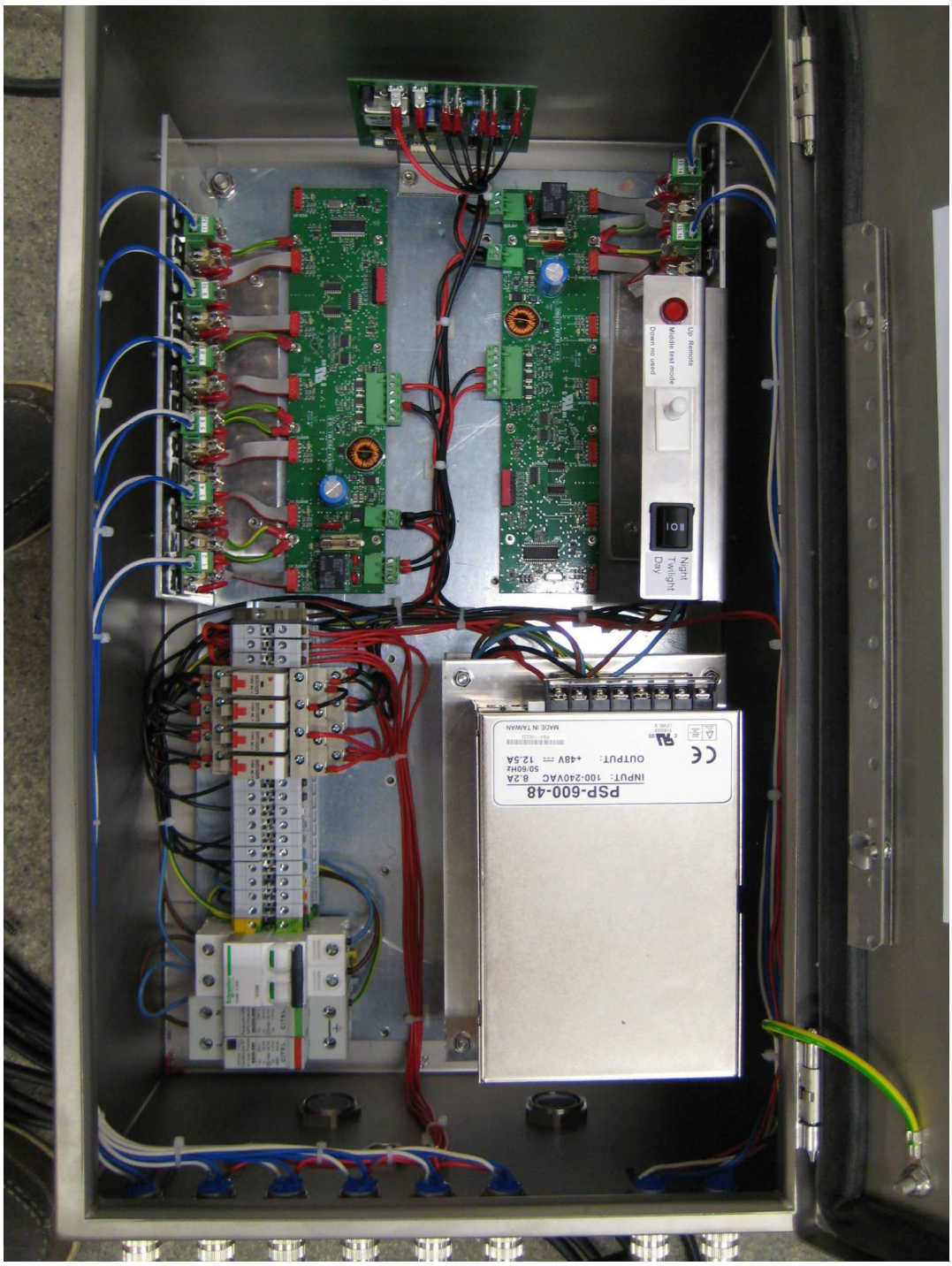


Photo 1-1-b. POWER SUPPLY COMPONENT LOCATIONS

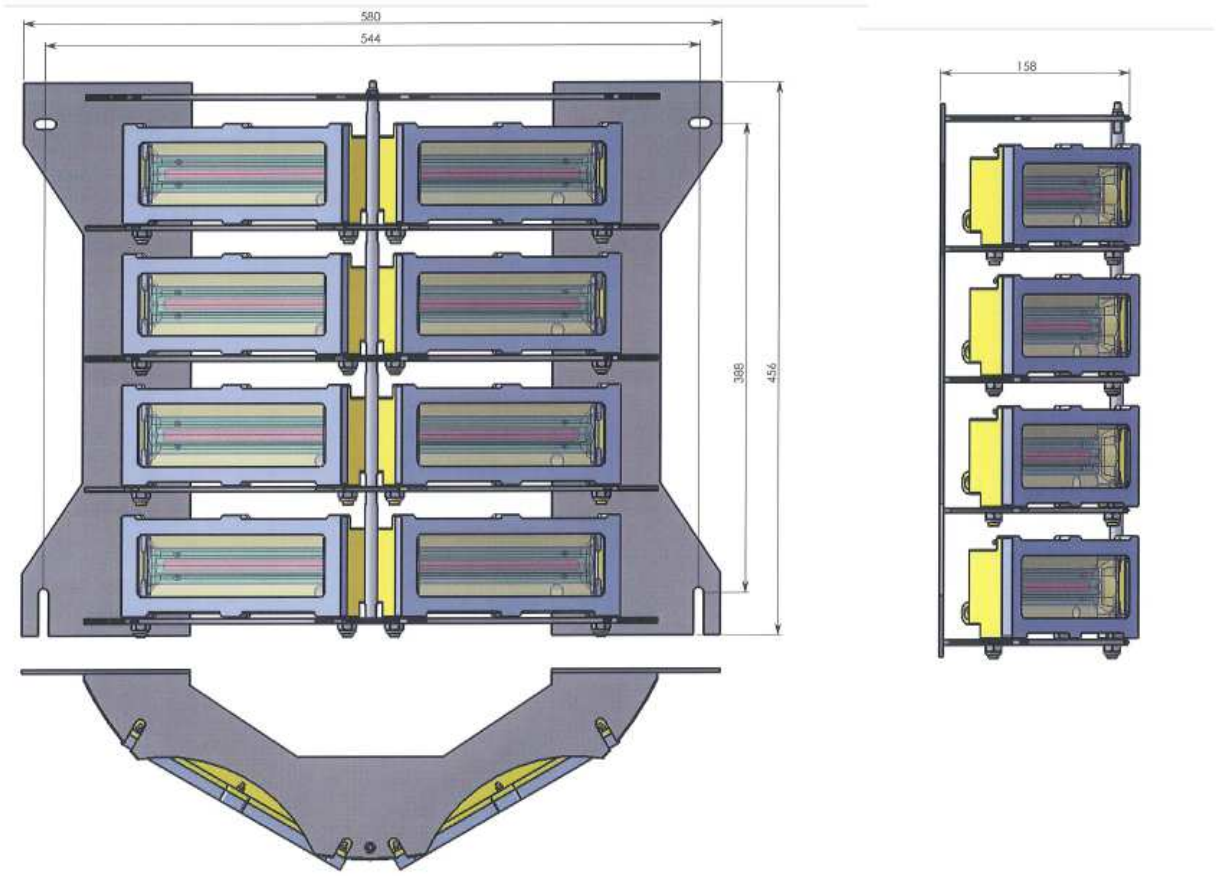


Figure 1-2. OUTLINE AND MOUNTING DIMENSIONS OBSTAFLASH HI flashhead

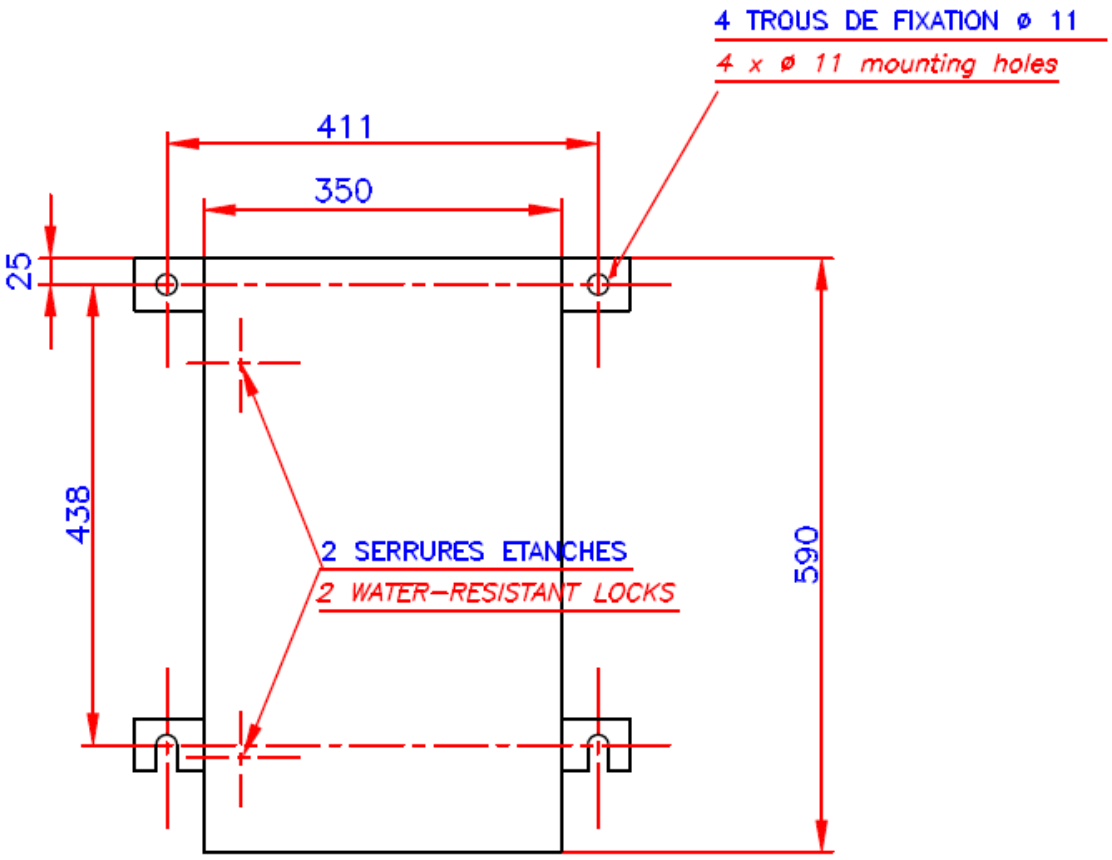


Figure 1-3 OUTLINE AND MOUNTING DIMENSIONS OBSTAFLASH HI POWER SUPPLY.

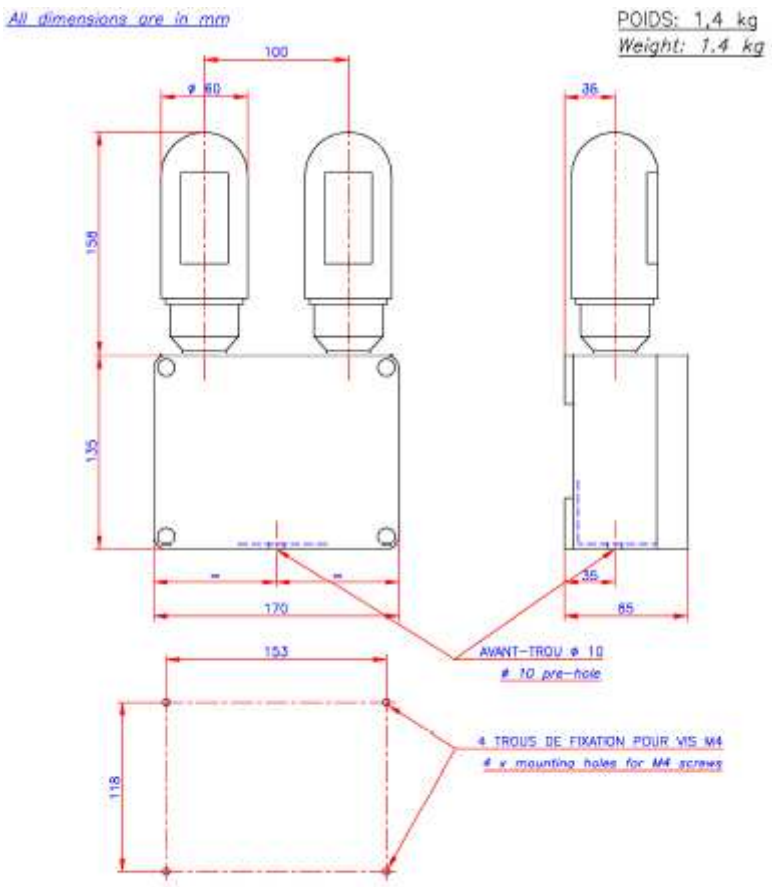


Figure 1-4 OUTLINE AND MOUNTING DIMENSION PHOTOCELL DAY/TWILIGHT/NIGHT

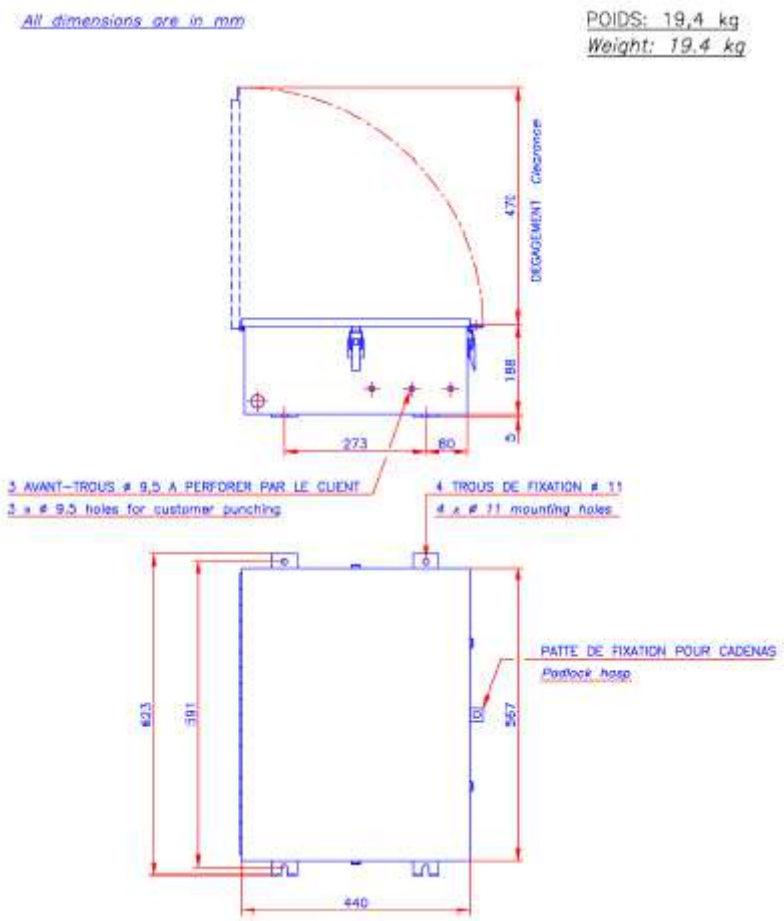


Figure 1-5 HI CONTROLER SS122

1.3 SPECIFICATIONS

1.3.1 LIGHT OUTPUT

Intensity

Day ..... 200 000 ±25% effective candelas, single flash
Twilight ..... 20 000 ±25% effective candelas, single flash
Night ..... 2 000 ±25% effective candelas, single flash

Beam Pattern ..... 120º horizontally; 3º min. vertically
Flash Rate: ..... 20 up to 40 fpm
Without SS122 controller
Master/slave configuration: ..... up to 4 lights can be synchronized
With controller: ..... up to 32 lights can be connected

1.3.2 ELECTRICAL INPUT

Power Supply ..... 110V to 220VAC 50/60Hz
Average power consumption during day time..…… Below 250W

1.3.3 MECHANICAL PROPERTIES

Obstaflash
- Weight ..... 18 kg
- Dimensions ..... h = 456 mm x d=500 mm
- Surface Area 870cm²
- Wind Load ..... 35 kg at 240 Km/h

Power Supply
- Weight ..... 15 kg
- Dimensions ..... w = 350 mm x h = 590 mm x d = 250 mm

1.3.4 OPERATING ENVIRONMENT

Operating Temperature ..... -30ºC to +55ºC
Humidity ..... 95% relative humidity

1.3.5 SYSTEM OPERATING STATUS INDICATORS

- 1 red indicator for power supply
- On the command card: some luminous indicators as per photo 1-6 page 13
- Fault indication: Relay closure, contact rating of 3A at 220VAC

1.4 Principle of operation

Each OBSTAFLASH LED is powered through 230 Volts AC 50 Hz. 2 power supplies convert the AC in 48VDC.

1.4.1 Power cards (photo 1-6 page 13)

The power card regulates the current inside 2 white led circuits contained in each projector. They are connected to the command card on one side and to the two "-" led circuits on the other side through their green connector. The status of each power card is indicated through the luminous indicators D6 to D12 (close to label WHITE#1 to WHITE#6 and RED#1) on the command card.
D6 to D12 are normally off and are becoming red blinking in case of default of the power card or its associated led projector.

1.4.2 Command card (photo 1-6 page 13)

The command card is powered through 48V coming from the power supplies. This card allows to:
- monitor the power cards,
- change the intensity depending on day/twilight/night mode received from the controller,
- detect if an alarm occurs: luminous indicator D15 is normally green and off in case of alarm,
- inform if the top sync is received from the controller: luminous indicator D14 is normally blinking red at the same pulse than the top sync received from the controller and is off in case no signal is received from the controller (if D14 is off, the command card creates its own 15 pulse per minute that is display by D13 indicator)

Each light includes 2 command cards:
- The command card « A » on the left side of the cabinet manages the day mode and is connected to 6 led projectors working during day time only
- The command card « B » on the right side of the cabinet manages the twilight/night mode and is connected to 2 upper projectors of the flashhead working permanently but with change of luminous intensity.

Note: Those 2 cards are similar except their software that is different.

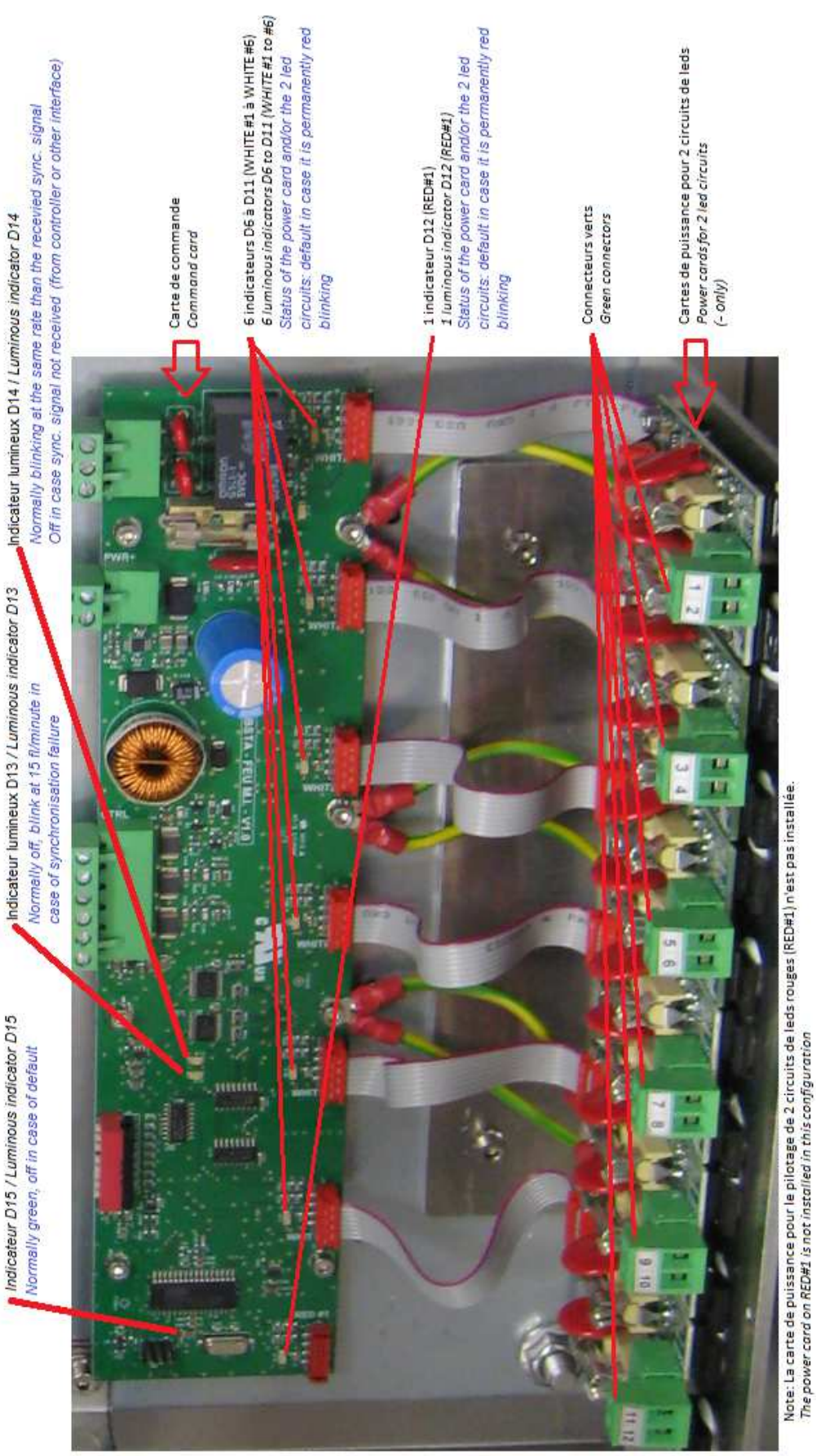


Photo 1-6. Luminous indicators position on the command card

SECTION 2.0 – INSTALLATION (wiring diagram 2-1 page 12)

2.1 Unpacking

Carefully unpack each item and remove any internal packing material from the power supply and the obstaflash. Examine each item for obvious physical damage. Report any claims to the carrier immediately. Pertinent data such as installation drawings, schematics, interconnection drawings, and operation manuals are included in the power supply carton.

2.2 Mounting and Preparation

2.2.1 OBSTAFLASH HI beacon

Normally the 3 obstaflash beacons are mounted at 120° around the obstacle at each level on the structure on a vertical plan.

2.2.2 OBSTAFLASH Power Supply

The power supply is connected to its respective obstaflash via the 2 meters cable provided with each led projector. If you required longer length of cable, consult your OBSTA representative.

2.2.3 Ambient Light Sensor P/N113130 (photocell)

The ambient light sensor should be mounted upright, away from artificial light (eg., floodlights), and in a location that will enable its sensor window to have an unobstructed view of the polar sky (eg., pointed north in the northern hemisphere). The ambient light sensor should be connected on the master light (if there is no controller) or on the controller itself (if there is a controller).

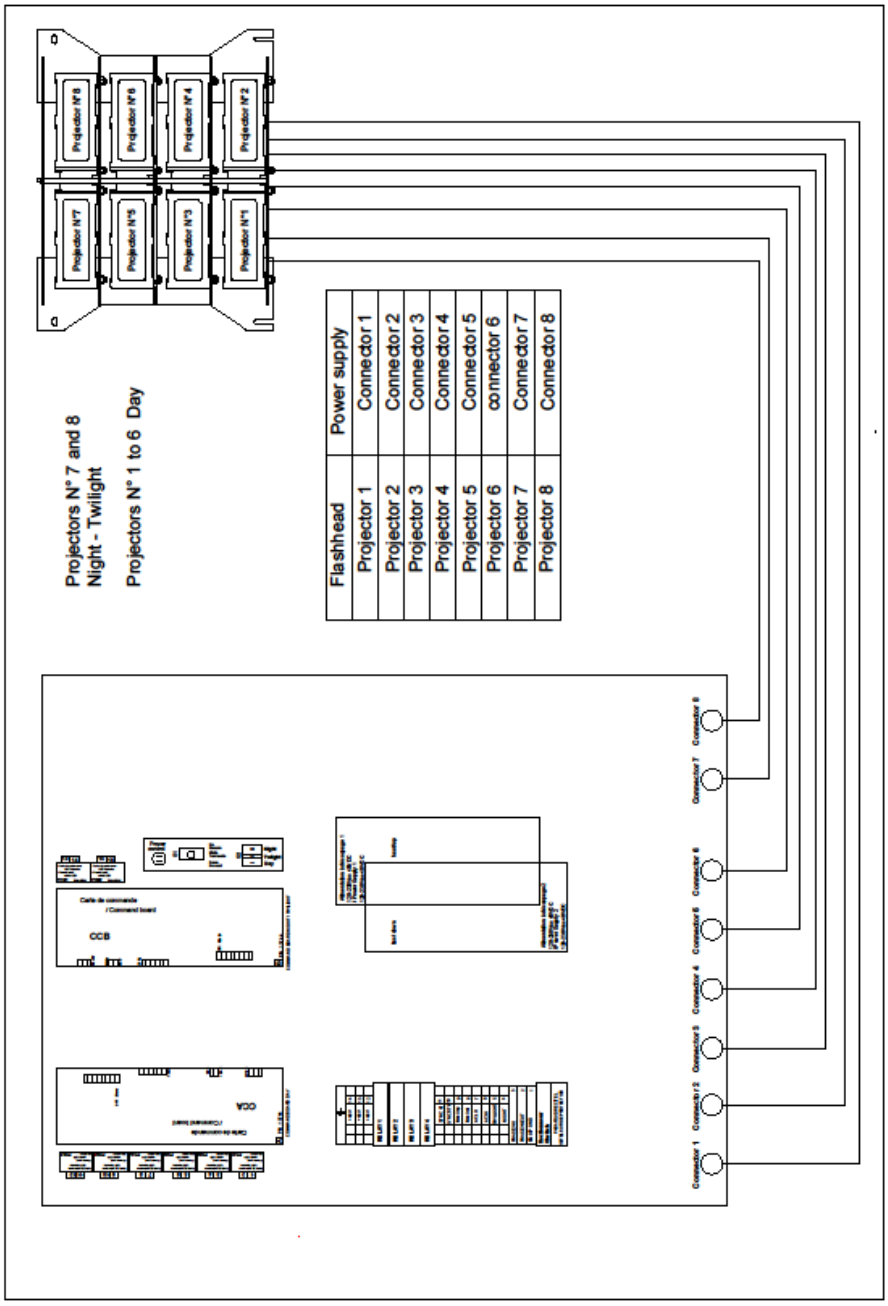
2.3 Installation Wiring

2.3.1 Flashhead to power cabinet:

The interconnection between the flashhead to their respective power cabinet is done with the 8 connectors located on the lower side of the cabinet according to photo 2-3-1-a and 2-3-1-b:

2-3-1-a: Position of the 8 connectors for each projector

IMPORTANT : The 2 upper projectors of the flashhead shall be connected to the 2 connectors on the right position for night & twilight use.



2-3-1-b : Wiring between power supply and its flashhead

2.3.2 Power cabinet to incoming power cable:

Make the connection for Incoming Power to the power supply to **TB1 in the power cabinet per** *Figure 1-1-a* as follows page 5.

2.3.3 Option with SS122 controller

In the controller, there is one Receiver Block (plugged into a Fault Receiver Board) for every eight lights. One Receiver will monitor up to 8 differently coded Transmitters. Fault Receiver Boards are installed at the factory in their proper locations in the Controller and must remain in sequential order to operate correctly. A -2 Receiver may not be used without a -1 being installed, a -3 Receiver must have a -1 and a -2 preceding it, etc.

Table 2-1 – Light number assignment																
Light number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Transmitter number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Receiver number	1								2							
Light number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Transmitter number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Receiver number	3								4							

In each cabinet, there is one transmitter card that should be affected to a unique light number (up to 32) matching with the light number in the controller. The fault transmitter is located in each power cabinet on the upper side according to the photo 1-1-b page 6 and photo 2-3-3-a below:

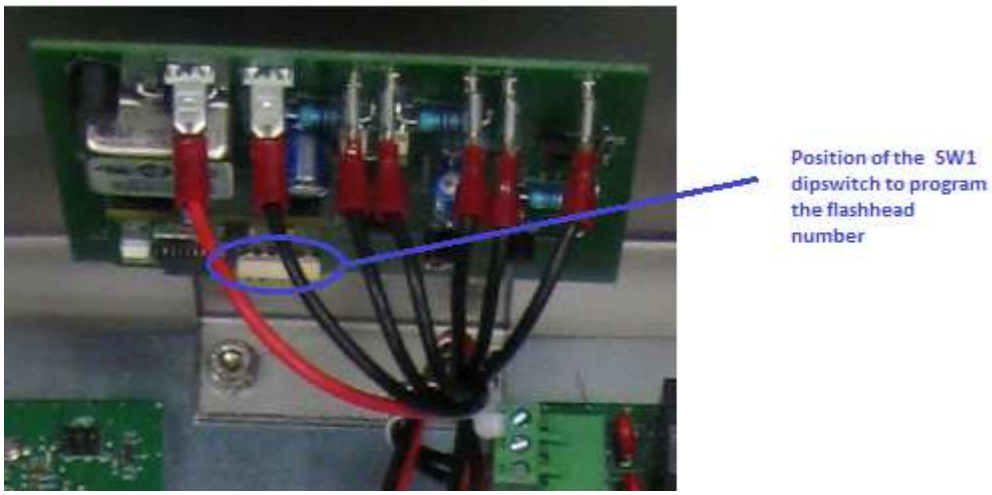


Photo 2-3-3-a: Fault transmitter card with dipswitch SW1

On the fault transmitter card, the light number should be assigned in the dipswitch SW1 according to the table 2-3-3-b below:

Light number	Dipswitch position SW1				
	1	2	3	4	5
1	-	-	-	-	-
2	On	-	-	-	-
3	-	On	-	-	-
4	On	On	-	-	-
5	-	-	On	-	-
6	On	-	On	-	-
7	-	On	On	-	-
8	On	On	On	-	-
9	-	-	-	On	-
10	On	-	-	On	-
11	-	On	-	On	-
12	On	On	-	On	-
13	-	-	On	On	-
14	On	-	On	On	-
15	-	On	On	On	-
16	On	On	On	On	-

Light number	Dipswitch position SW1				
	1	2	3	4	5
17	-	-	-	-	On
18	On	-	-	-	On
19	-	On	-	-	On
20	On	On	-	-	On
21	-	-	On	-	On
22	On	-	On	-	On
23	-	On	On	-	On
24	On	On	On	-	On
25	-	-	-	On	On
26	On	-	-	On	On
27	-	On	-	On	On
28	On	On	-	On	On
29	-	-	On	On	On
30	On	-	On	On	On
31	-	On	On	On	On
32	On	On	On	On	On

Table 2-3-3-b: Setting of the light number on the transmitter card in each light

2.3.4 Option without controller

Each cabinet of flashhead should be connected through a shielded cable 4x1,5mm².
Photocell is connected to the first flashhead configured as the “master”
Other flashheads are configured as “slave” and received the day/twilight/night and synchronization signal from the first one.

2.4 Final Check with controller

Before applying power to the equipment, check all wire connection according to figure 2-4 to the controller and ensure that any user-installed wiring does not interfere.

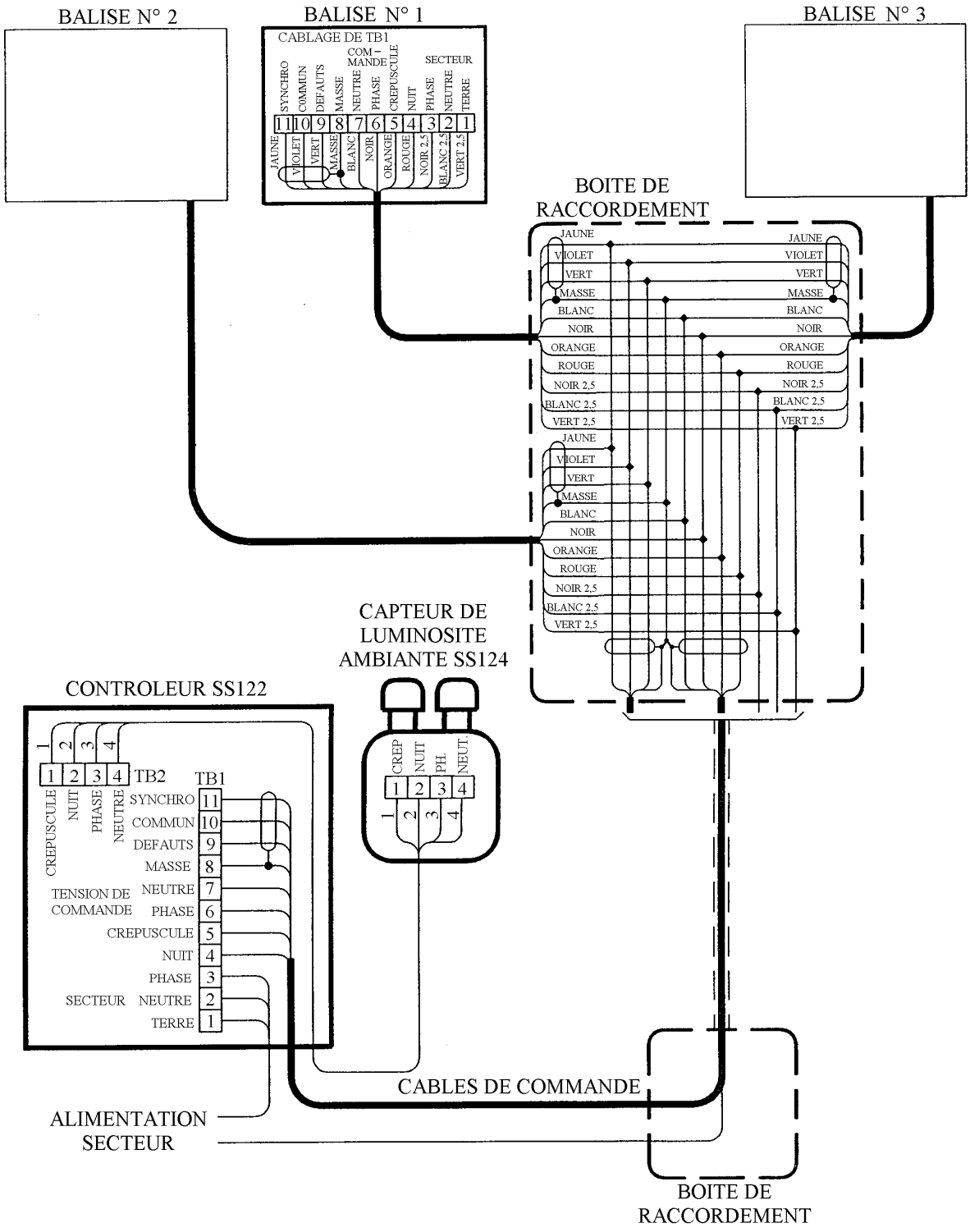
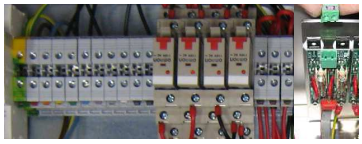
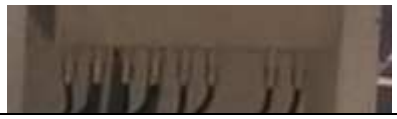


Figure 2-4. WIRING DIAGRAM WITH HI CONTROLLER SS122

SECTION 3.0 - MAINTENANCE

3.1 Annual visit

Test	Frequency	Action	Sanction	Solution
Cable	Annual	Tighten the terminals on TB1 and the 8 green connector of the power cards inside the cabinet  Tighten the 8 connectors of each led projector outside the stainless cabinet 		
Waterproof	Annual	Visual	No water inside	Search the water leak
Corrosion	Annual	Visual	No excessive corrosion	Replace the defective part
Power supply	Annual	Visual	Status of the led indicators	Replace if necessary
Led projector	Annual	Clean with a humid cloth the glass of each projector		

3.2 Possible troublesome

Troubesome	Action	Solution
Red indicator for voltage presence is off	Check input voltage 230VAC between the terminals 2 and 3 on TB1, and the status of the circuit breaker and surge protection.	Replace the defective part if necessary (surge protection or circuit breaker)
D15 is off on the command card 230VAC is there but the light does not work.	Check the presence of the 48VDC voltage on the 2 power supplies and the status of their fuse	Replace the power supply or the fuse if necessary
The light works permanently on day mode, twilight mode or night mode	Check if S1 is on « remote». Or check the wires coming from the controller on the terminals 4 and 5 of TB1. Or check the connection of the relays. Put S1 in “test mode”: When S2 in night mode, the relay 3 must be lighted When S2 is in day mode, the relay 4 must be lighted When S2 is in twilight mode, all relays should be off	Tighten the terminals on TB1, on the relay. Replace a relay if necessary
Some indicators D6 to D12 are red blinking on the command card One led projector (or more) does not work	Tighten the 8 connectors of each led projector below the stainless cabinet Otherwise tighten the green terminals of the 8 power cards (total 16 wires “-“) and terminals 12, 14 and 15 on TB1 (total 3 wires “+”) Otherwise check the power card and its projector according to **3.3**	Replace power card or led projector if necessary

D13 is blinking and D14 is off on the command card The flashes of the light are not synchronized with the other lights and it flashes at 15 pulse per minute	The top sync is not received from the controller. Check the wires coming from the controller on terminals 10 and 11 of TB1, and to the command card	Check the wires between the light and the controller
The light does not send any alarm to the controller in case of default	Check the wires coming from the controller on the terminals 6 to 10 on TB1 Check that the light number that has been assigned is unique on the fault transmitter card	Replace the fault transmitter card if necessary
All lights work in day/twilight/night mode permanently	Check the controller is on « remote» position. Otherwise check the position of the photocell (in the North in the North Hemisphere), the wiring of the photocell and test the photocell by masking it with your hand	Replace photocell or the controller if necessary

Otherwise call the manufacturer

3.3 Projector not working

For example if luminous indicator D7 (or WHITE#2) is red blinking, disconnect the green terminal from its power card and plug it to the power card for example D8 (or WHITE#3) close to it.
- If the luminous indicator D8 does blink also, it means the projector is defective
- If the luminous indicator D8 does not blink, it means the projector is ok but the power card linked to WHITE#2 is defective

SECTION 4 – SPARE PARTS

Beacon-obstaflash

Led projector……...……..113761L2

Power supply

Command card 48V on the left…..……..…….…….……....113744HIL
Command card 48V on the right...……...…….…….....113744HIR
Power card 48V…..…….……113741
Security switch and test button…….…...113743
Fault transmitter button card……...113749
Photocell…….…….113130
Surge protection 220V……...…..……..……..461111
220V Power supply……...……....……113742

HI controler

A1 PC Board, SYNC Timing and Driver 277-2673 113679
K6,K7 Relay, 3PDT, 24VDC 77-3041 113677
RX1 (1 to 8) PC Board, Digital Monitor 277-2536 113671
RX1 (9 to 16) PC Board, Digital Monitor 277-2537 113672

SECTION 5 – GSM modem with optical network between all lights

5.1 GSM modem interface

The GSM modem sends periodically to the server the status of the lights. It is located inside the stainless power cabinet of one of the obstaflash cabinet and connected via an optical network to the other obstaflash cabinets.
This card does have 4 LEDs indicators: a green led close to the connector of the light and 3 other ones (green, orange, red) close to the dipswitch. First one is on if voltage is present on the first flashing light. The table and the photo below give a quick status of the interface depending on those 3 luminous indicators:

Signification	green LED	orange LED	red LED
Card not configured	OFF	ON	ON
Card configured, standby (no connection attempt)	ON	OFF	OFF
Card waiting the connection or disconnection	ON	ON	OFF
Card connected to the GSM network but not to the server	ON	ON	ON
Carte connected to the server	ON	OFF	ON
Error SIM card	OFF	OFF	ON

GSM interface

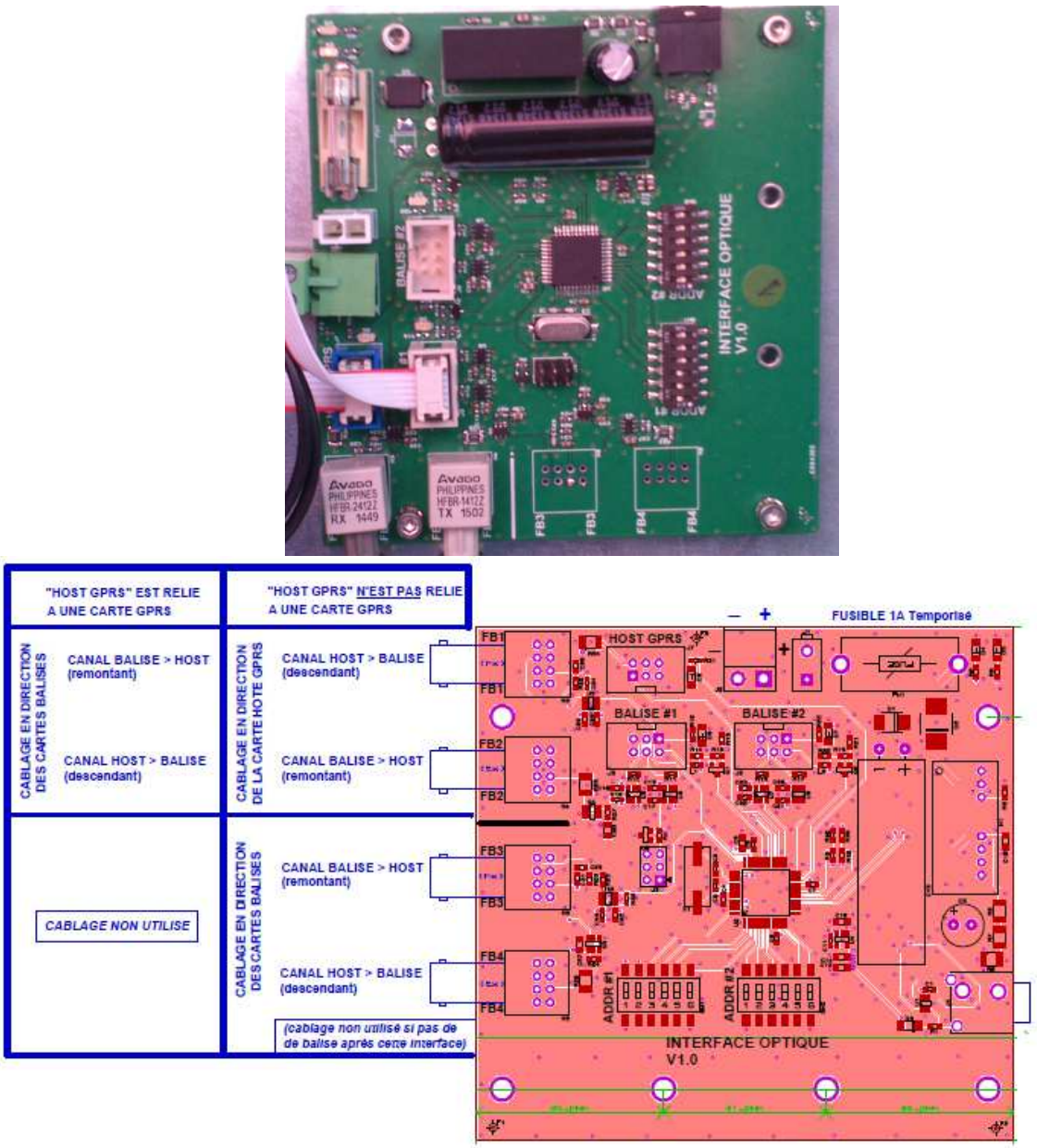
This interface comes with a 5 meters magnetic GSM antenna connected on the jack plug.

5.2. Optical network connected to the GSM interface

Each optical interface is connected to the network through optical cables:

- 2 optical cables are going in direction of the GSM card up “remontant”
- 2 optical cables are going in direction of the other cabinets down “descendant”

A unique address (dipswitchs ADDR#1 & ADDR#2) allows identifying the light on the server.



Optical interface photo and details

Those interfaces are located inside each obstaflash stainless power cabinet. The first power cabinet contains both the GSM interface and the first optical interface. The pairs of optical cable are connected with ST connectors.