OBSTAFLASH HI LED LIGHTING SYSTEM

INSTALLATION AND OPERATION GUIDE

OBSTA- 2 rue Troyon 92316 Sèvres Cedex FRANCE
Phone : +33 1 41 23 50 10 Fax : +33 1 41 23 50 11
www.obsta.com

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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	113780TDF
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

This list is not exhaustive and some options can be added for synchronization and remote alarm control (GPS for wireless synchronization, optical cable for synchronization and/or GPRS interface for remote monitoring) and combination of medium and high intensity system.

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)
- 2 command cards to monitor the 8 power cards. The command card do have :
    - 1 luminous indicator per set of power cards/projector (so total 8 active one)
    - 1 luminous indicator for synchronization signal received from the controller or other interface,
    - 1 luminous indicator for synchronization failure in case no signal is received
    - 1 luminous indicator for general alarm
- all related power circuit (surge protection, switch, DC power, test buttons)
- a main switch and an AC power indicator.

So total is 12 active luminous indicators

The S1 test button in figure 1-1-a page 5 allows 2 positions:

- “Up”or “Down”: remote position, the light is in normal operation
- “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 allows 3 positions:

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

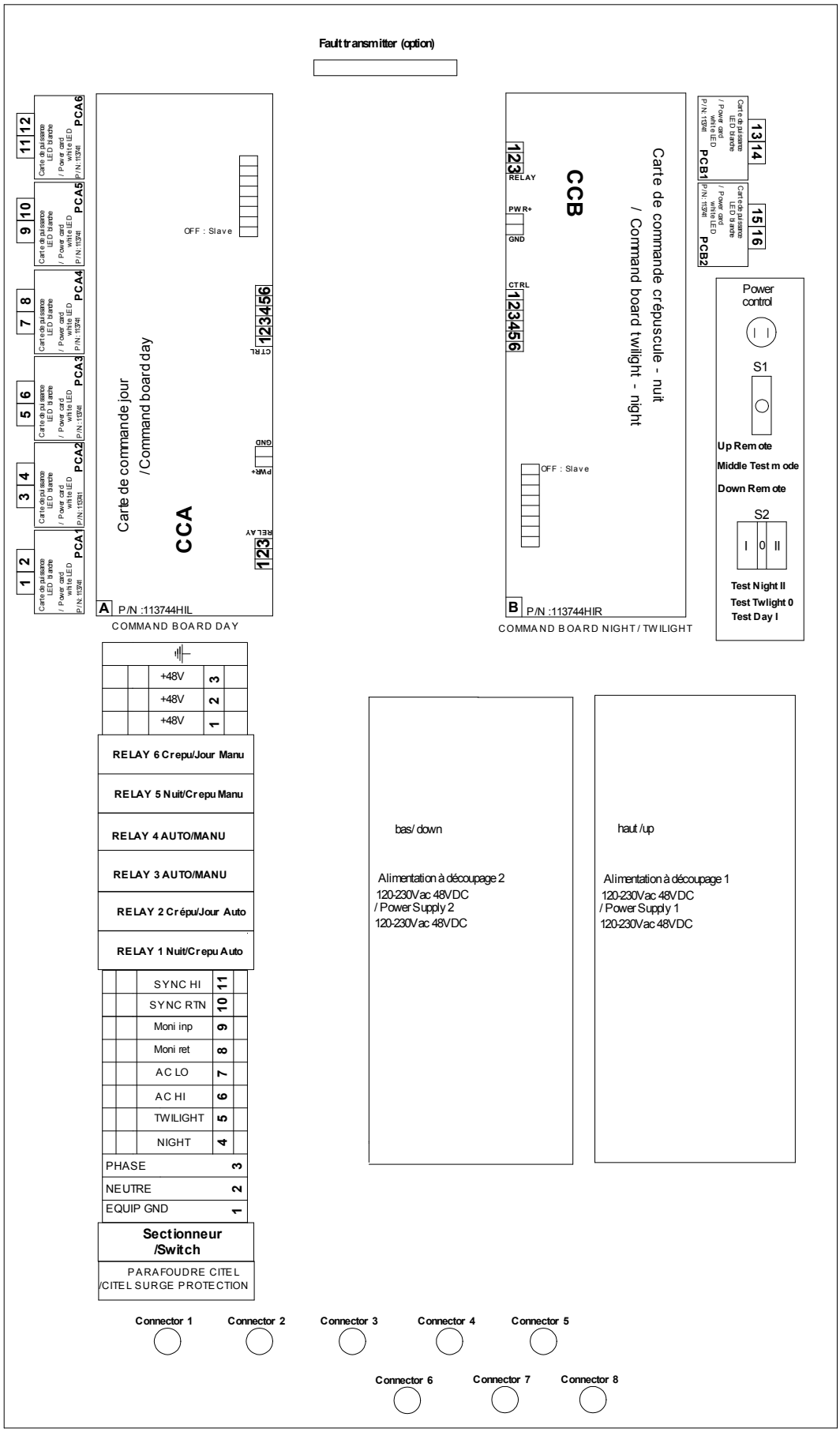


Figure 1-1. POWER SUPPLY COMPONENT LOCATIONS

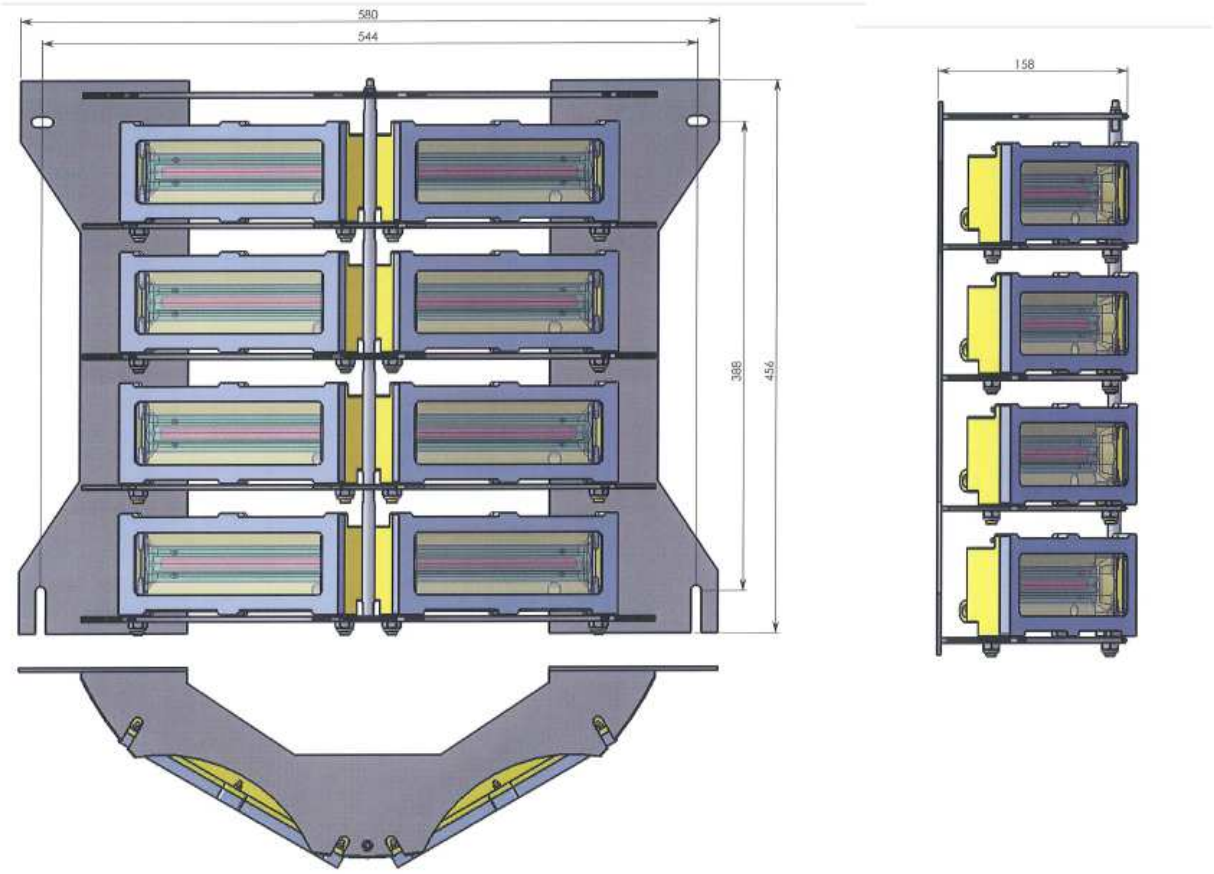


Figure 1-2. OUTLINE AND MOUNTING DIMENSIONS
OBSTAFLASH HI flashhead

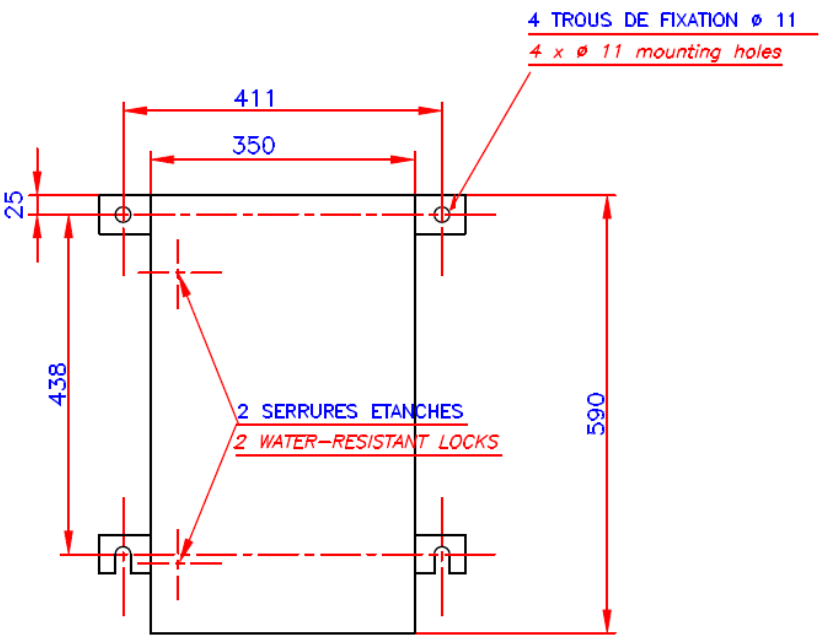


Figure 1-3 OUTLINE AND MOUNTING DIMENSIONS OBSTAFLASH HI POWER SUPPLY.

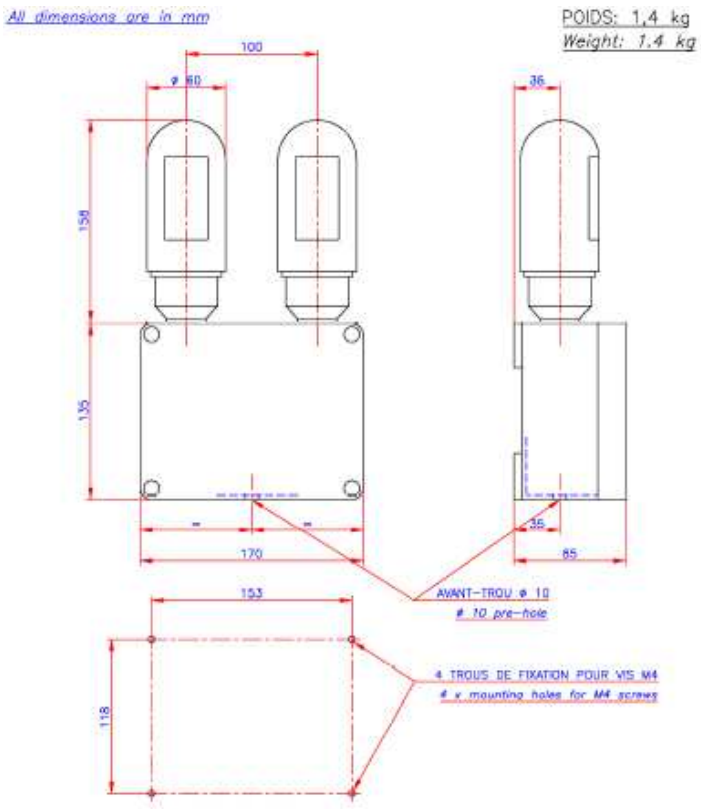


Figure 1-4 OUTLINE AND MOUNTING DIMENSION PHOTOCELL DAY/TWILIGHT/NIGHT

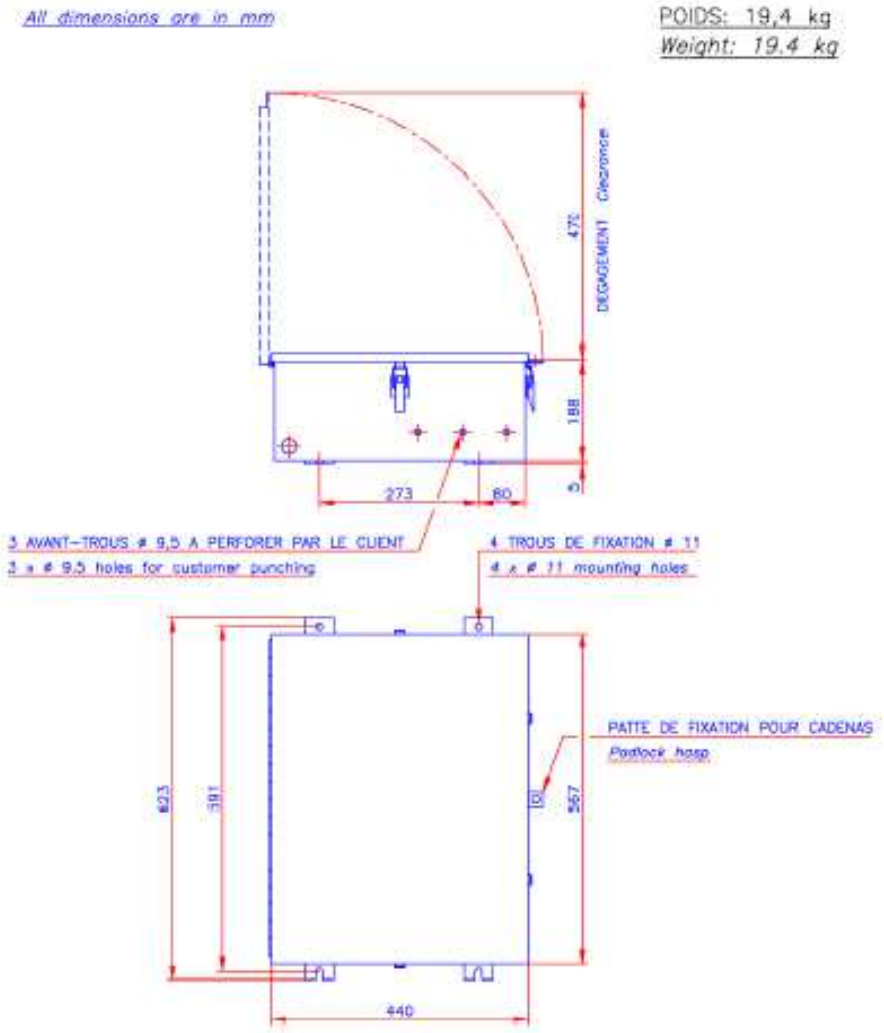


Figure 1-5 HI CONTROLER SS122

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 .....14 kg
- Dimensions.....l = 456 mm x W=580 mm h=158mm
- Surface Area..... 870cm²
- Wind Load.....35 kg at 240 Km/h

Power Supply
- Weight .....25 kg
- Dimensions..... w = 350 mm x h = 590 mm x h = 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: 12 luminous indicators see figure 2-3
- Fault indication: Relay closure, contact rating of 3A at 220VAC

SECTION 2 : PRINCIPLES OF OPERATION

2.1 Power supply P/N 113742

The main power input is converted in 48VDC through the AC power supply that feeds the command card.

2.2 Power cards P/N 113741

The system includes 8 power cards that regulate the current sent to the 16 white led circuits as per figure 2-2:

- 6 power cards for white led circuits: each card regulates the current of 2 white led circuits of the same projector during daytime;
- 2 power cards for white led circuits: each card regulates the current of 2 white led circuits of the same projector during twilight and night time.

Those 7 power cards are connected to the command card through connector. The status of the command cards and their respective led circuits are indicated by the luminous indicators D6 to D12 on the command card (figure 2-1 below). Those indicators are normally off and red blinking in case of default.

2.2 Command card P/N 113744

The commands cards is powered in 48V and allows to:
- monitor the 8 power cards,
- change the color and light intensity between day time and night time,
- select master or slave mode of the system (dipswitch 1). Without external synchronization signal, the card is set up in master mode. In case of GPS or other sync interface, the card is set up in slave mode.
- select the configuration of the lights during day time and night time: dual color, white only or red only,
- detect the alarm of the complete system with 9 luminous indicators described in figure 2-1,
- select the flash rate 20 or 40 flash per minute (dipswitch 3) in case master mode is selected.

Note: The configuration of this card is done in the factory and shall not be modified by the end-user.

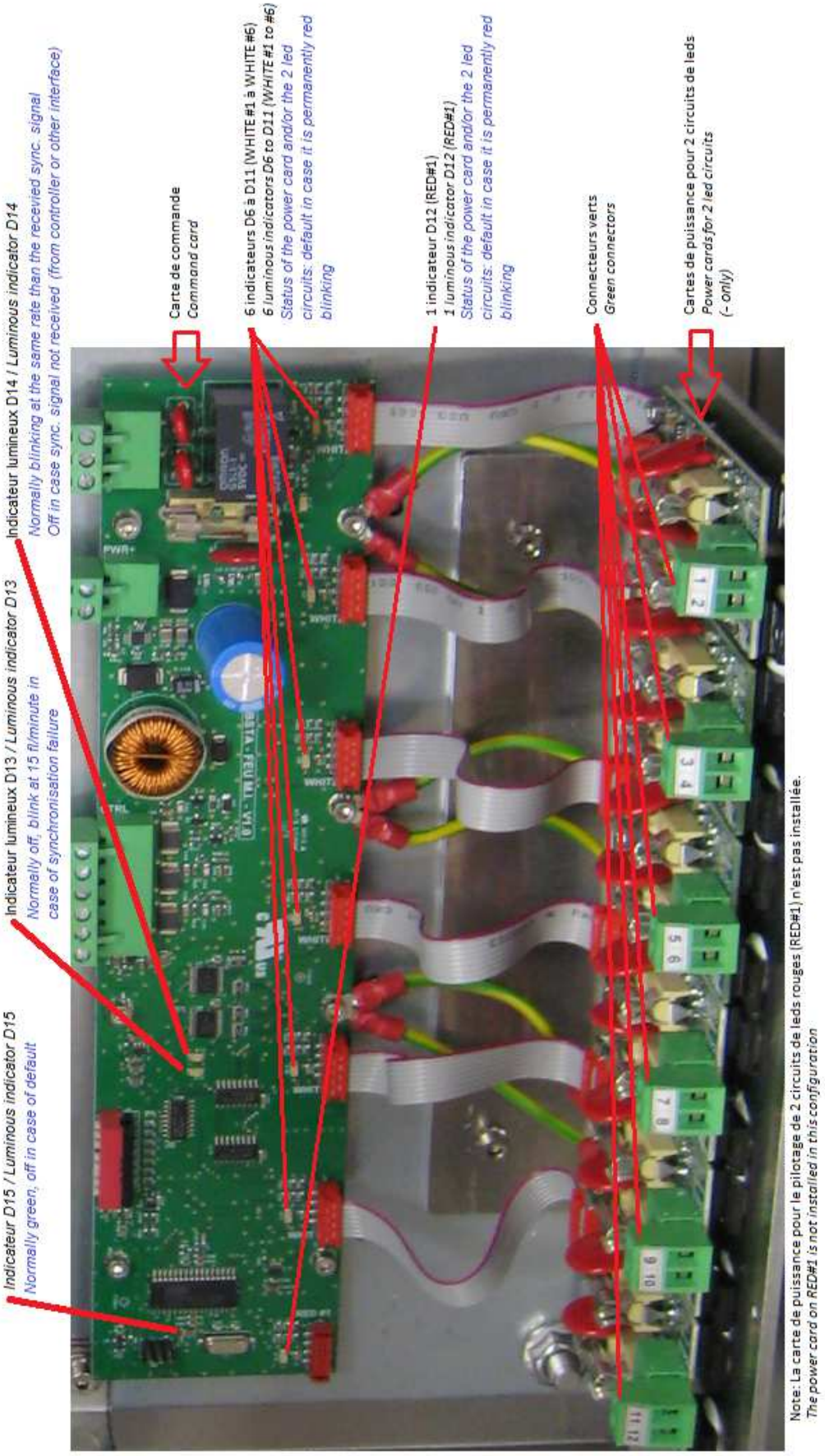


Figure 2-1. LUMINOUS INDICATORS ON THE COMMAND CARD

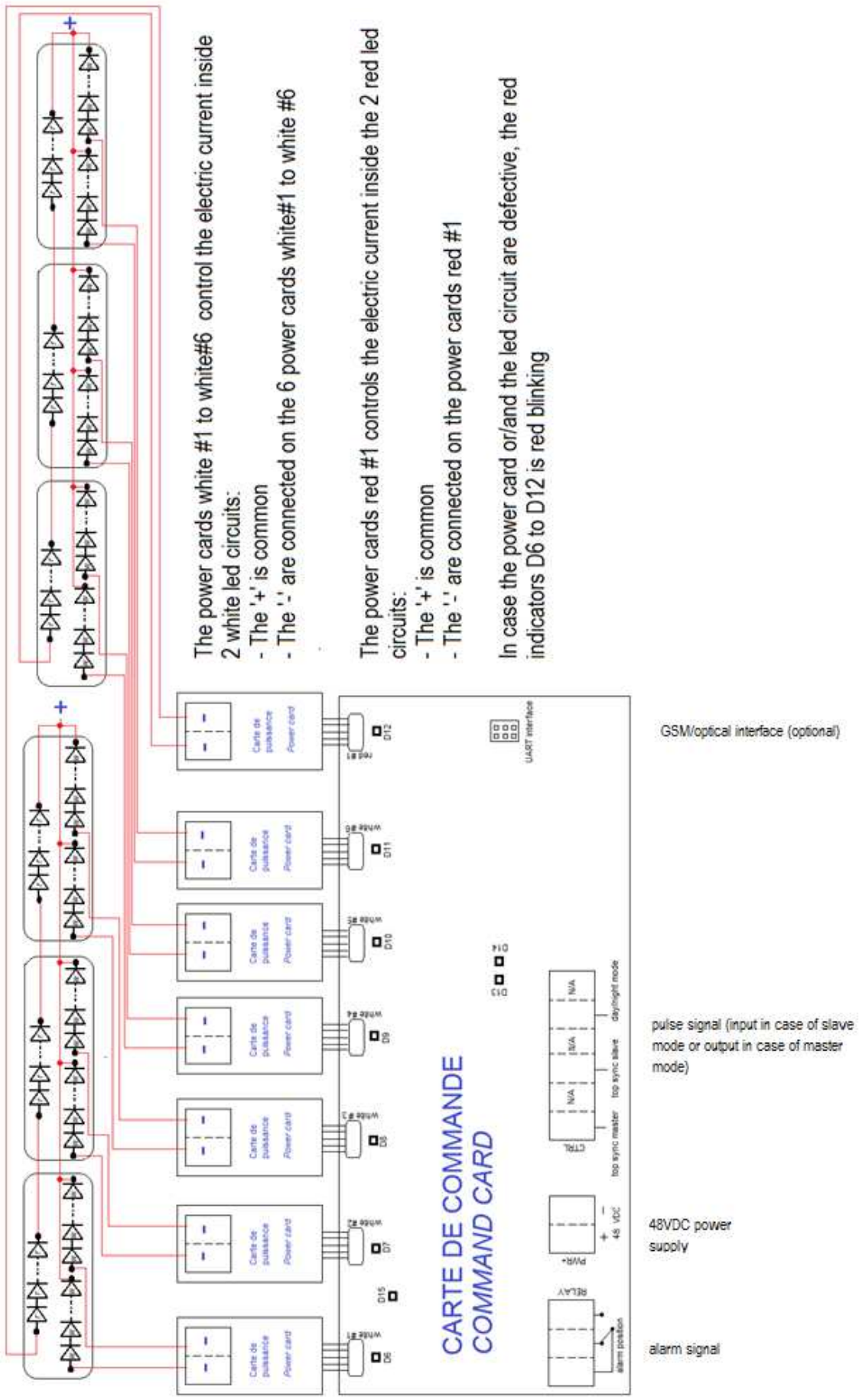
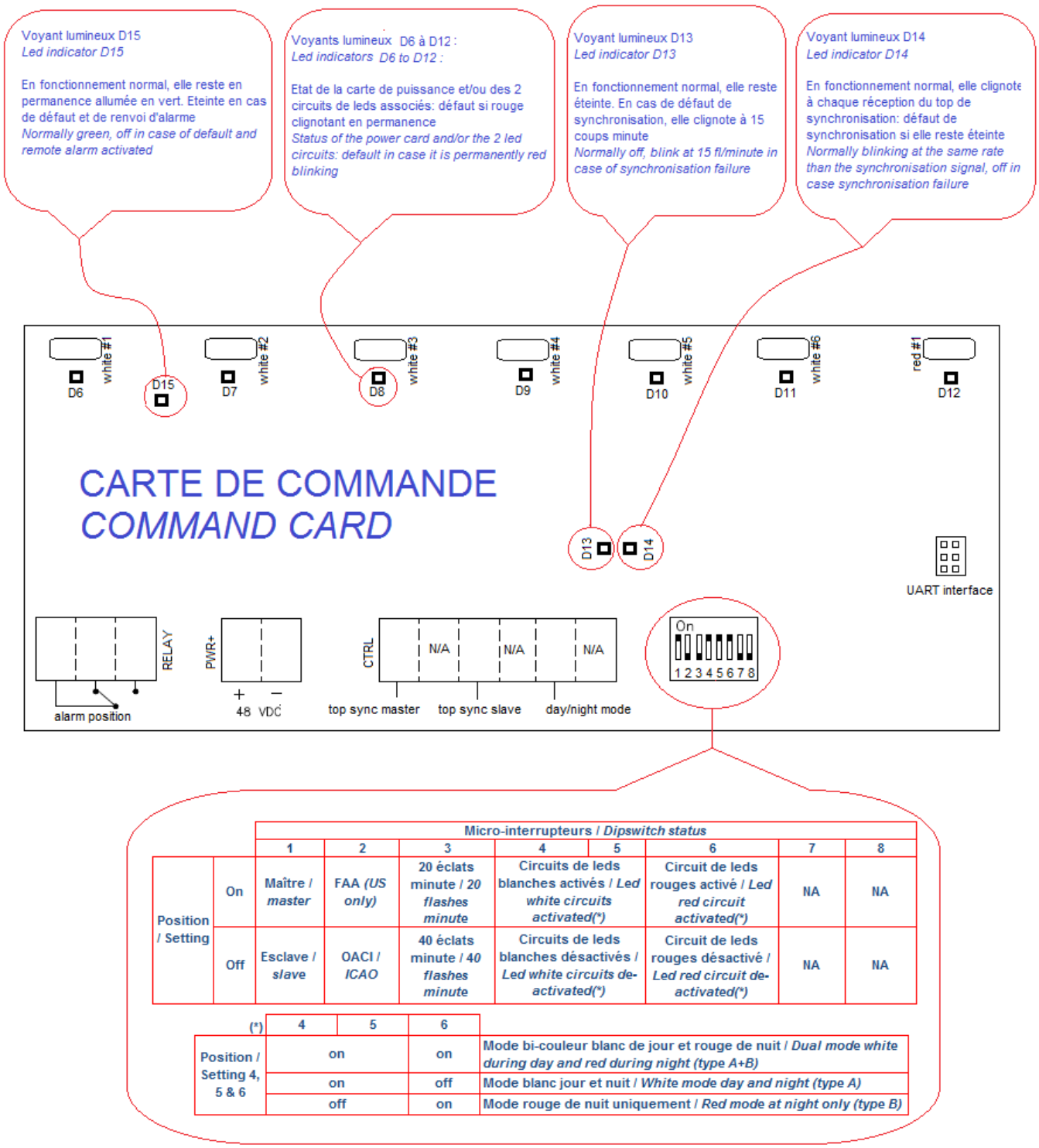


Figure 2-2. WIRING OF LED CIRCUITS ON THE COMMAND CARD



		Micro-interrupteurs / *Dipswitch status*							
		1	2	3	4	5	6	7	8
Position / Setting	On	Maître / *master*	FAA *(US only)*	20 éclats minute / *20 flashes minute*	Circuits de leds blanches activés / *Led white circuits activated(*)*		Circuit de leds rouges activé / *Led red circuit activated(*)*	NA	NA
	Off	Esclave / *slave*	OACI / *ICAO*	40 éclats minute / *40 flashes minute*	Circuits de leds blanches désactivés / *Led white circuits de-activated(*)*		Circuit de leds rouges désactivé / *Led red circuit de-activated(*)*	NA	NA

(*)	4	5	6	
Position / Setting 4, 5 & 6	on		on	Mode bi-couleur blanc de jour et rouge de nuit / *Dual mode white during day and red during night (type A+B)*
	on		off	Mode blanc jour et nuit / *White mode day and night (type A)*
	off		on	Mode rouge de nuit uniquement / *Red mode at night only (type B)*

Figure 2-3. 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 (if there is a controller).

2.2.4 GPS synchronizer P/N113746

If included with the system, the GPS is a DIN rail module fixed inside the power supply that comes with an external antenna to be mounted in an unobstructed location of the sky.
The GPS module does have 2 luminous indicators that give the information received from the satellite (usually 5 to 10 minutes after initialization):

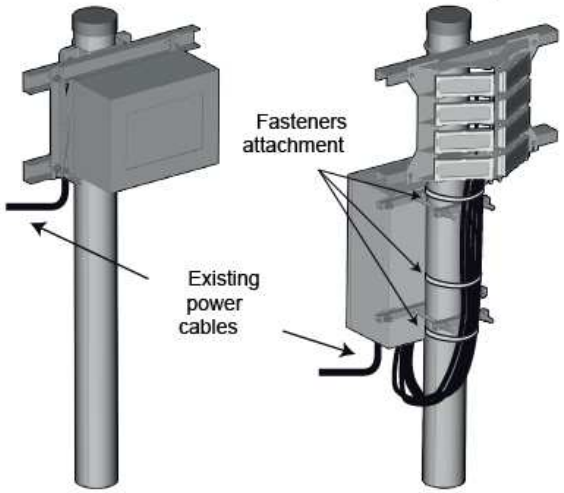
- 1 green indicator blinking at 20 or 40 flashes per minute (a dipswitch allows to chose 20 or 40 flashes per minute)
- 1 red indicator switched off during day time and switched on during night time

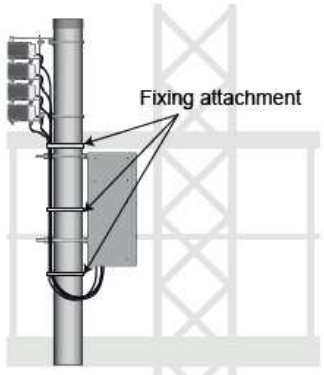
Retrofitting of phased out HI Xenon SS122 (monobloc) with controller SS125 by a new OBSTA HI LED (flashead + power supply)

Before any operation : disconnect power from HI light!
(from the junction box and/or from controller)

HI Xenon SS122
mounted on pole

OBSTA HI LED
(flash head + power supply)
mounted on pole





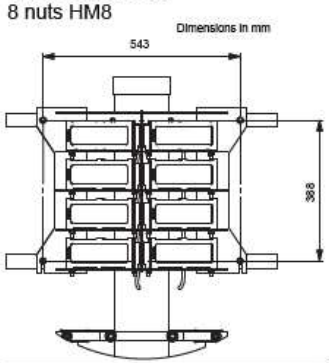
Make sure to position the new flashhead above any balcony or lattice so that there would be no possibility to obstruct the light on horizontal beam

If the flashhead is mounted on a tube and need to be elevated, we can propose the bracket CO1841 adding an extra 20cm height compare to previous and existing bracket holes

① Mounting of flashhead

Dismount the old light while keeping the fixing accessories, its beam orientation and by marking or labelling the power cables wires. Mount the new flashhead on the same metal angles than previous (543x388):

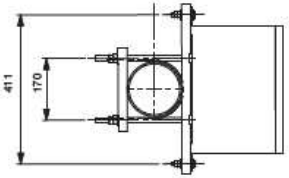
- 4 screws M8,
- 8 flat washers Ø8
- 8 nuts HM8

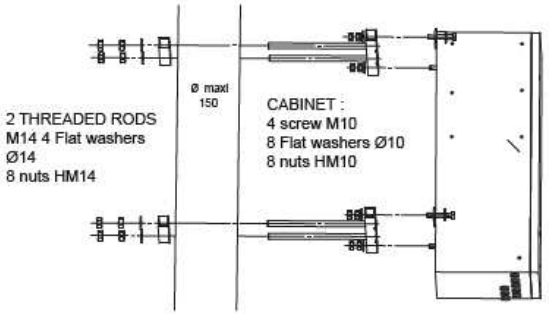


② Mouting of power supply

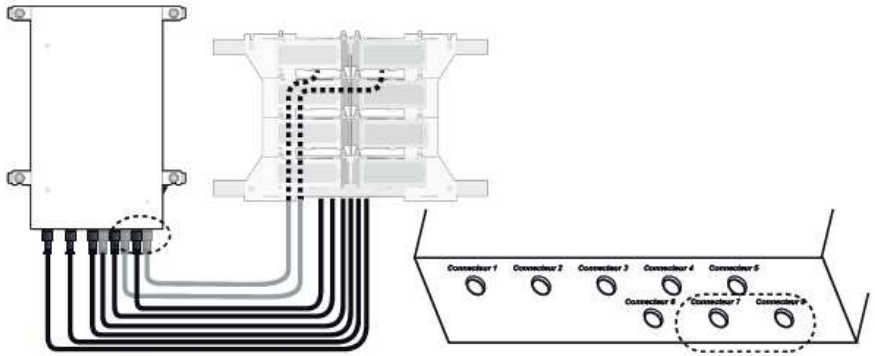
Mount the power supply close.

If the kit is mounted on a tube, use the OBSTA braket code 113789 (for tube Ø 150 mm maximum)





③ Plug the 8 connectors of each projectors under the Power Supply



There is no connecting order to follow.
Only constrain are the 2 top projectors to be connected on plugs n°7 et n°8 located on the righ below the Power Supply

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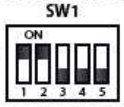
④ Settings

For installations equipped with SS125 controler, a fault transmission card (code 113749) is equiped in each cabinet.
Assign to each light a unique number using the 5 micro-switch SW1 located on the default transmission card located on top of the cabinet

For example the Number 4 is assigned to this flashhead

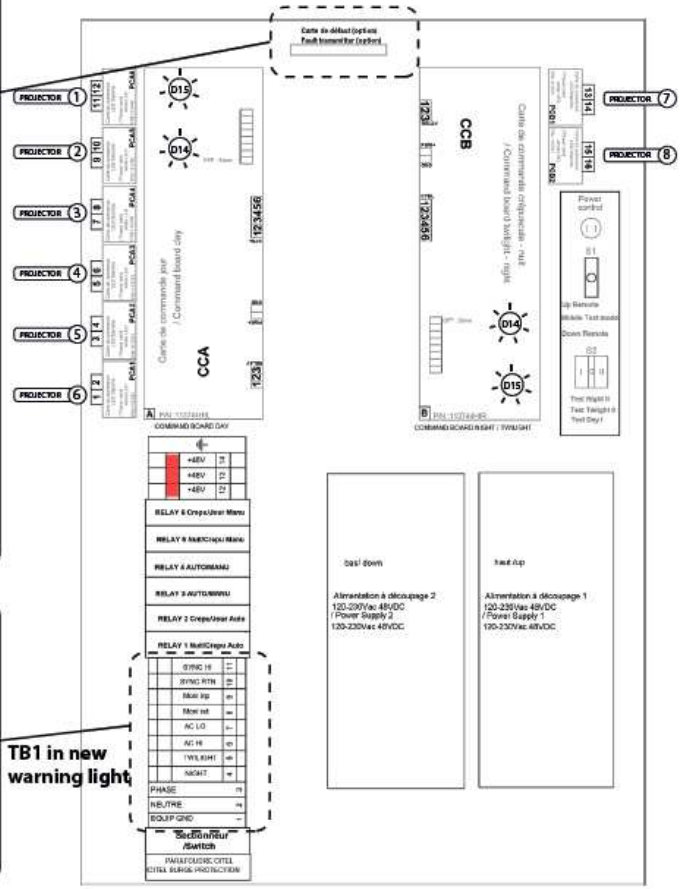


The coding ot the 5 micro-switch SW1 is the same as the one of old flashhead following this table.

Flashead Number	Micro switch 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	-

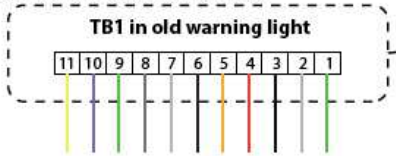
Flashead Number	Micro switch SW1				
	1	2	3	4	5
17	-	-	-	-	On
18	On	-	-	-	On
19	-	On	-	-	On
20	On	On	-	-	On
21	-	-	On	-	On
22	On	-	On	-	On
23	-	On	On	-	On
24	On	On	On	-	On
25	-	-	-	On	On
26	On	-	-	On	On
27	-	On	-	On	On
28	On	On	-	On	On
29	-	-	On	On	On
30	On	-	On	On	On
31	-	On	On	On	On
32	On	On	On	On	On

Inside of the Power Supply of the considered flashhead



⑤ Wiring

Check the proper condition of the Power cable and connect to the terminal TB1 labelled from 1 to 11 following the same order than old HI Xenon lights dismounted previously.
Connect also the cable shield to earth (Terminal 1 of TB1)



⑥ First operation

- Double check every wiring before switching on the power supply.
- Set S2 button in 'Test Day' position (forced 'day mode') : all projectors and all 2 green indicators D14 on the command cards must flash synchronized.
- Set S2 button in 'Test Night' position (forced 'night mode'), only the 2 top projectors on top of flashhead must be ON.
- Confirm that all flasheads are synchronized with each others.
- Simulate and alarm by unplugging at least 3 connectors n°1 to n°6, and then 1 of the 2 connectors n°7 et n°8 : the alarm indicator D15 on the corresponding command card (that is normally green) should be OFF and into the bottom controllern the alarm signal should turn ON to report the fault.
- Set S2 button in 'Night' position and close the door.
- It is advised for safety sake to add an extra protection (sealant tape) on the 8 connectors and 2-3 stainless steel fasteners on the projector cables.

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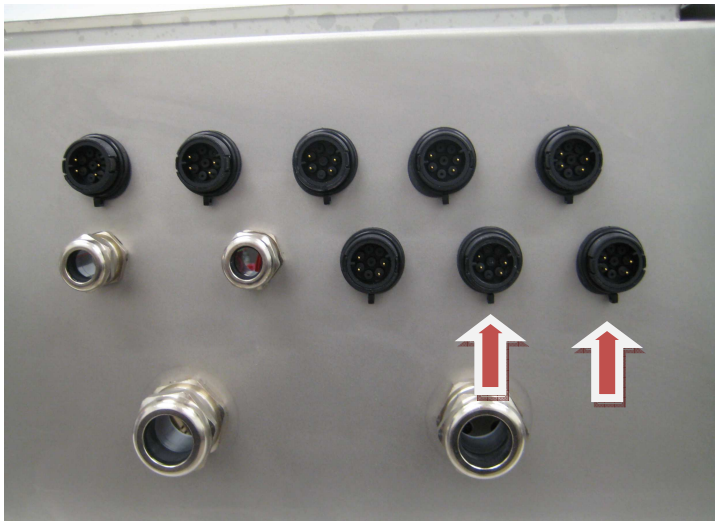
2.3 Installation Wiring

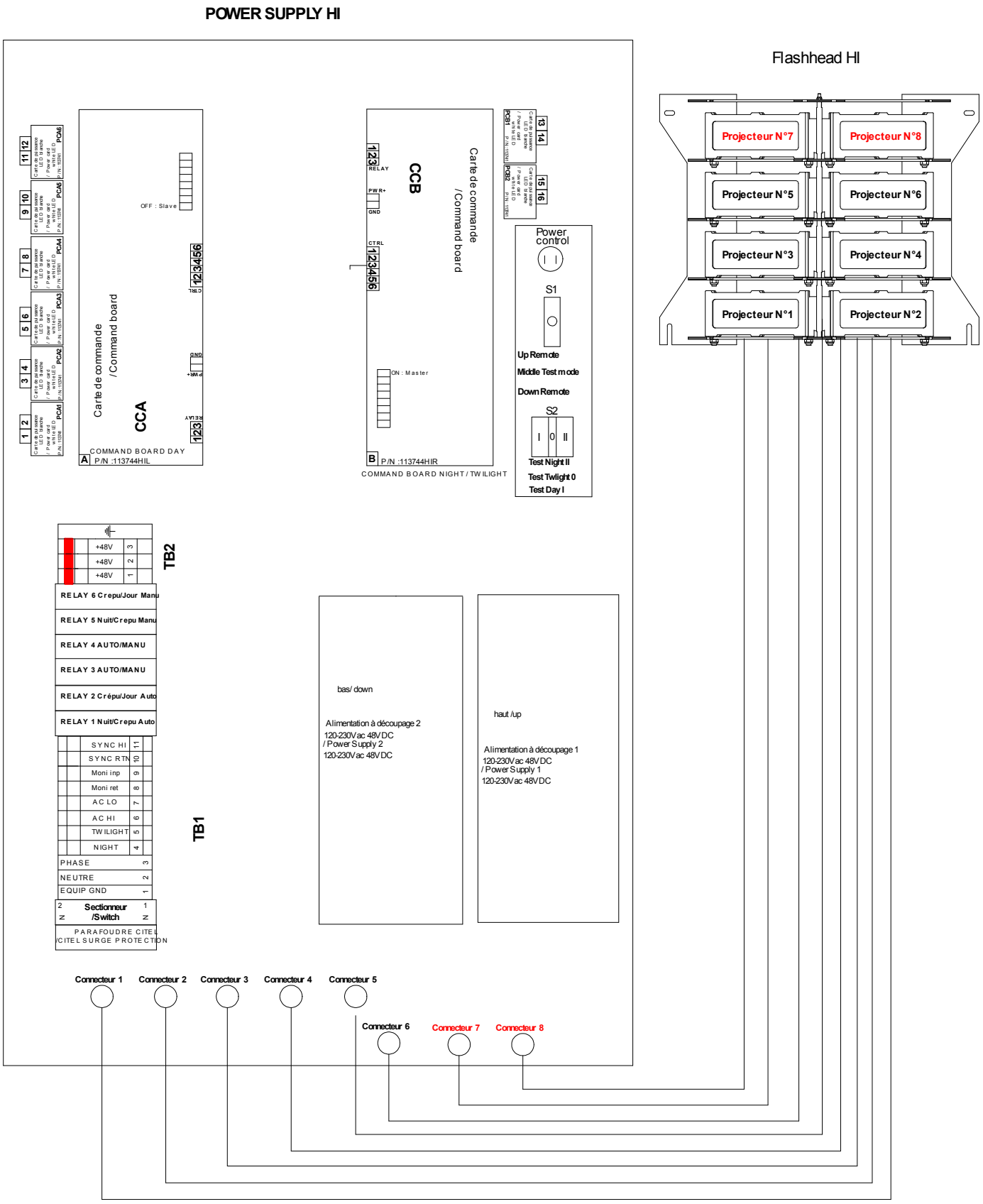
2.3.1 Flashhead to power cabinet:

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.



Nota: Projecteurs N°7 et N°8(crépuscule et nuit) à connecter aux connecteurs N°7 et N°8

Note: Projectors # 7 and # 8 (twilight and night) to be connected to the connectors # 7 and # 8

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

2.3.2 Power cabinet to incoming power cable:

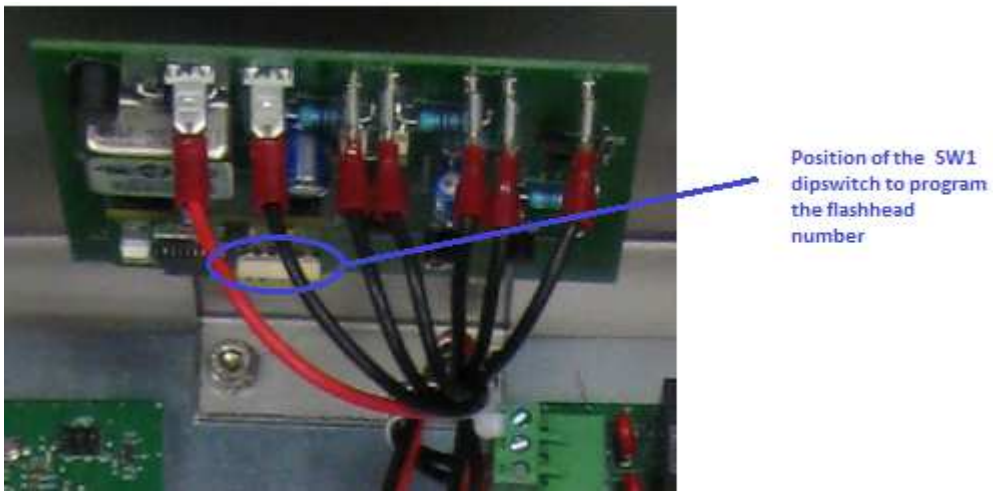
Make the connection for Incoming Power to the power supply to **TB1 in the power cabinet per** *Figure 1-1-a* as follows page 5.

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							

for each flashhead, 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 supply on the upper side according to the photo 1-1-a page 5 and photo 2-3-3-a below:



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

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

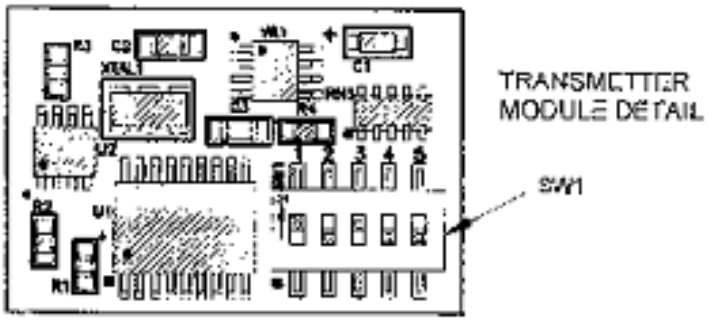


Figure 4-7b : SW1 location

Light number	SW1 DIP switch position				
	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	SW1 DIP switch position				
	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

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.

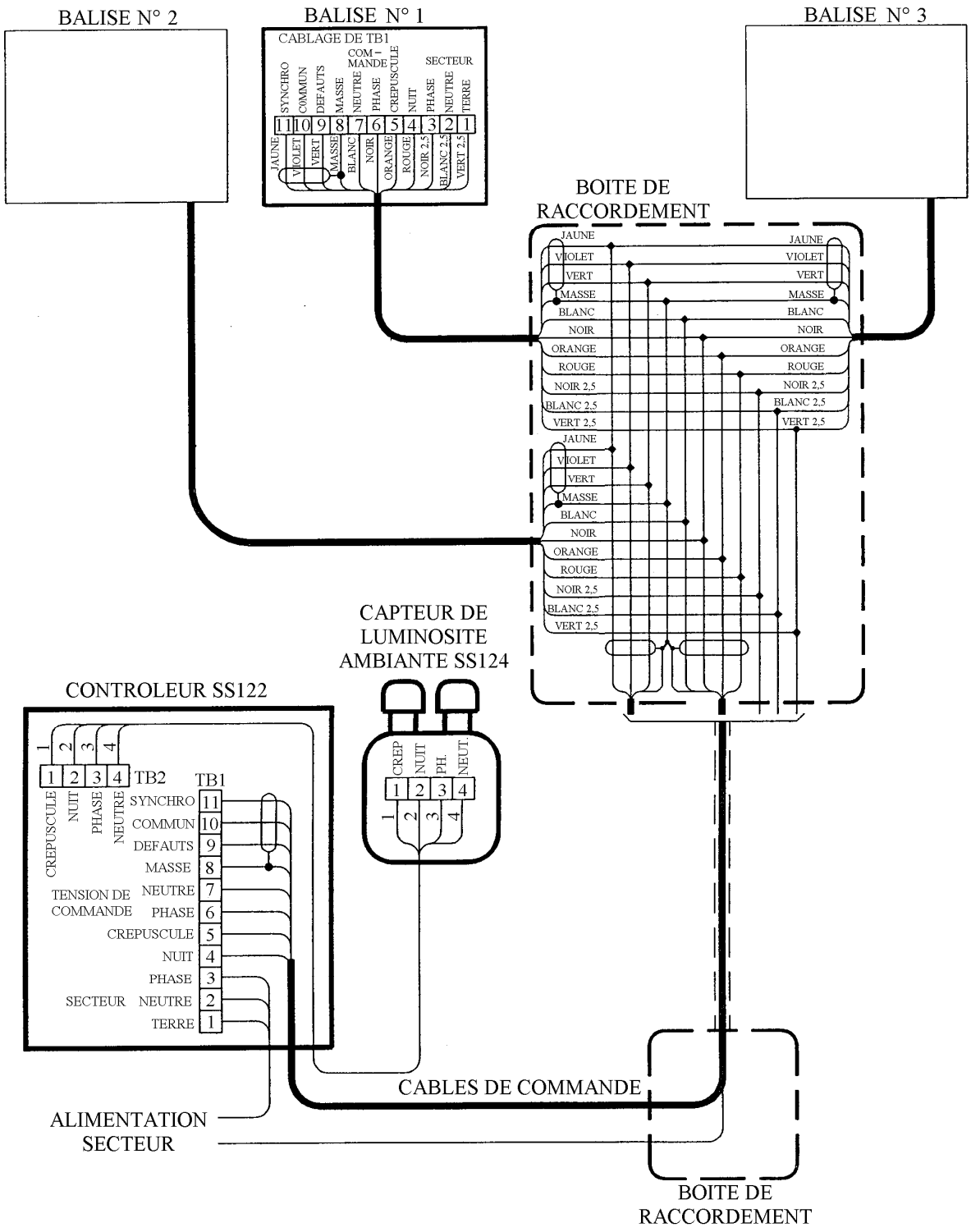


Figure 2-4. WIRING DIAGRAM WITH HI CONTROLLER

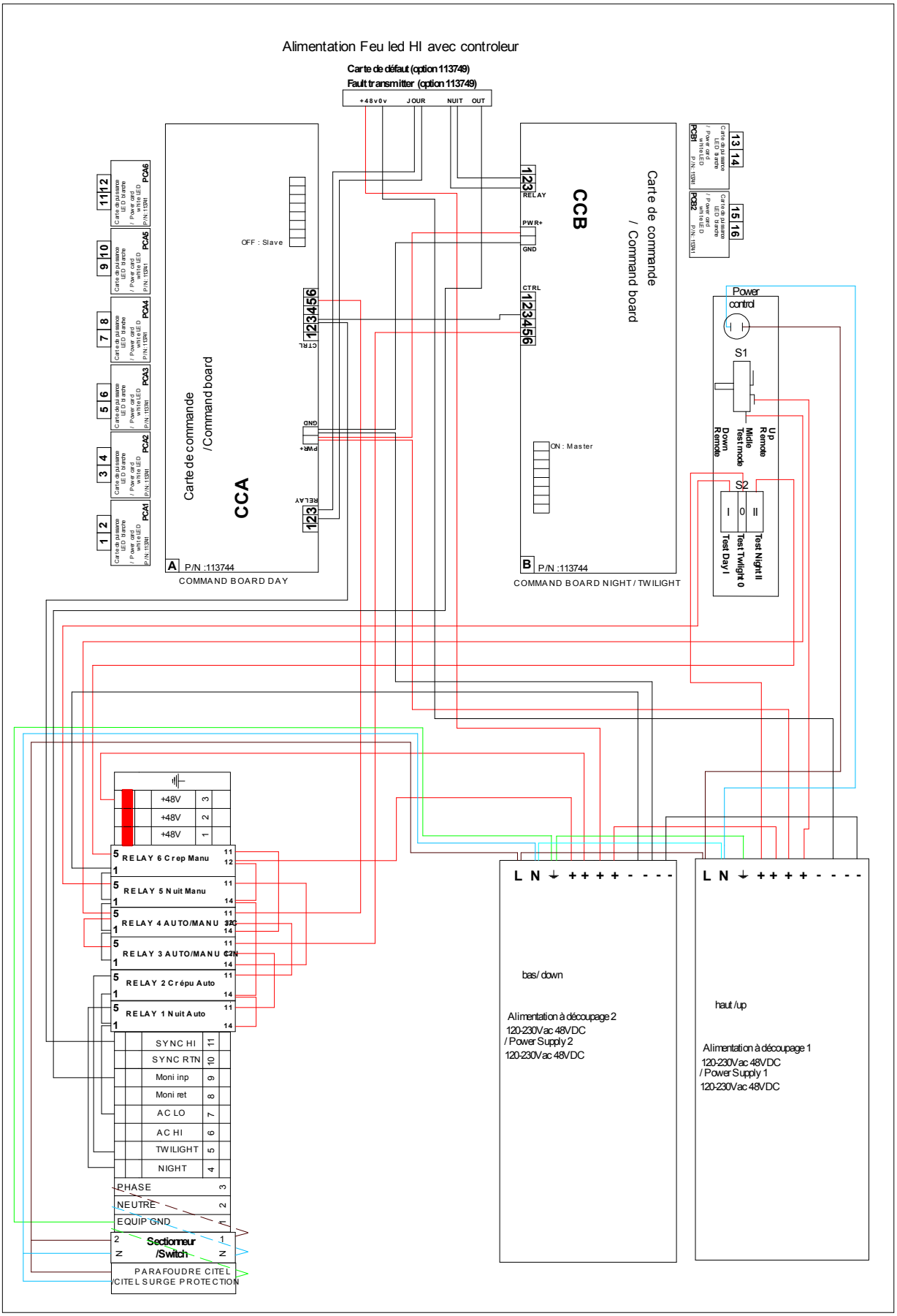


Figure 2-5. WIRING DIAGRAM OF THE POWER SUPPLY

SECTION 4.0 - MAINTENANCE

6.1 Obstaflash beacon

No special or preventive maintenance is required for the obstaflashs, but only that which can be performed on an as-needed basis.

6.2 Obstaflash power supply

No special maintenance is to be done on the power cabinet except when it is necessary, however it is recommended to tight screws once a year

6.3 Photocell

The only maintenance required for this unit is the periodic cleaning of the Photocells. Frequency of cleaning will depend on the environment to which they are exposed

SECTION 5 – SPARE PARTS

Beacon-obstaflash

Led projector……...……..113761BL2

Power supply

Command card 48V on the left…..……..…….……..…….....113744L
Command card 48V on the right...……...…….…….…….....113744R
Power card 48V…..…….…….……113741
Security switch and test button…….…...113743
Fault transmitter button card (option) ……....113749
Surge protection 220V……...…..……..……..451721
Power supply 230V 600W……...…….....…….……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
Photocell…….…….…113130

GPS interface (option)

GPS synchronizer…… …….…….113746