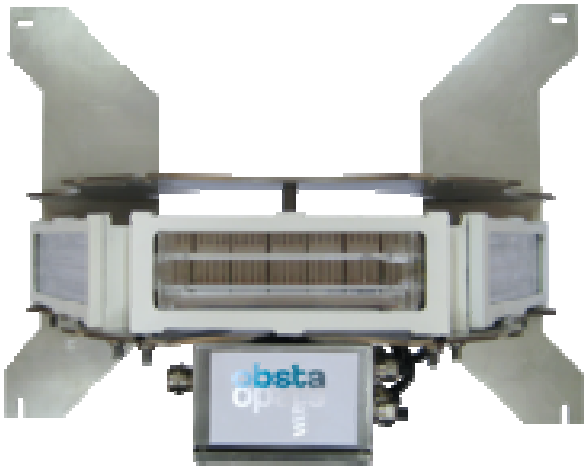
RELIABILITY IN OBSTRUCTION LIGHTING
BALISAGE AÉRIEN

OBSTAFLASH LED



INSTALLATION AND OPERATION GUIDE

OBSTA- 2 rue Troyon 92316 Sèvres Cedex FRANCE
Phone : +33 1 41 23 50 15
Fax : +33 1 41 23 50 11
www.obsta.com

OCTOBER 2018

DESCRIPTION	COLOR	POWER SUPPLY	P/N
Medium Intensity type A et B OBSTAFLASH180	white and red	48V	113738
OFP-CAB-12P-4E-RW-240	white and red	120-230 V – 50/60Hz	113739-P12-4E
OFP-CAB-6P-2E-RW-240	white and red	120-230 V – 50/60Hz	113733-6P-2E

This list is not exhaustive and some modifications can be done on the power supply for remote alarm control 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 Led Medium Intensity Obstruction Lighting Systems manufactured by OBSTA. The lighting systems described in this manual are ICAO Medium intensity type A/B and FAA type L-865/L-864, for use as medium intensity aviation obstruction warning systems.

1.2 General Description

The OBSTAFLASH Lighting System is led medium intensity systems manufactured to comply with ICAO annex 14 chapter 6 and Federal Aviation Administration Advisory Circular 150/5345-43. Each system consists of 1 beacon, an associated power supply with integrated controls, an ambient light sensor (photocell) or GPS, and the interconnecting cable. System components are shown in Figures 1-1, 1-2, 1-3, 1-4 pages 5 to 8.

The obstaflash beacon consists of 3 led projectors made in glass and aluminum, and a junction box all fixed on a stainless bracket. Each projector includes 2 white led circuits working in active redundancy for the white version and/or a red led circuit shared with 2 other projectors. Each projector white or dual color comes with a quick connector.

The power supply contains:

- for the type A+B : 14 power cards (12 for the 24 white led circuits and 4 red led circuits)
- for the type A only : 6 power cards for the 12 white led circuits
- for the type B only : 1 power card for the 2 red led circuits

- 1 or 2 a command card with microprocessor and all related circuit (power supply, surge protection, a security switch S1, a test button S2 and a luminous indicators).

The S2 button does have 3 positions:

- “Remote” position, the lights are in normal operation and controlled by the photocell or GPS or other interface
- “Day” position, the light is forced in day mode
- “Night” position, the light is forced in night mode.

Option

The security interlock switch (S1) goes in “off” position and interrupts incoming power when opening the power supply. Once the power supply is opened, S1 can be forced and blocked on « on » position by pulling it. When closing the power supply, the security interlock switch (S1) will automatically go back in “on” position.

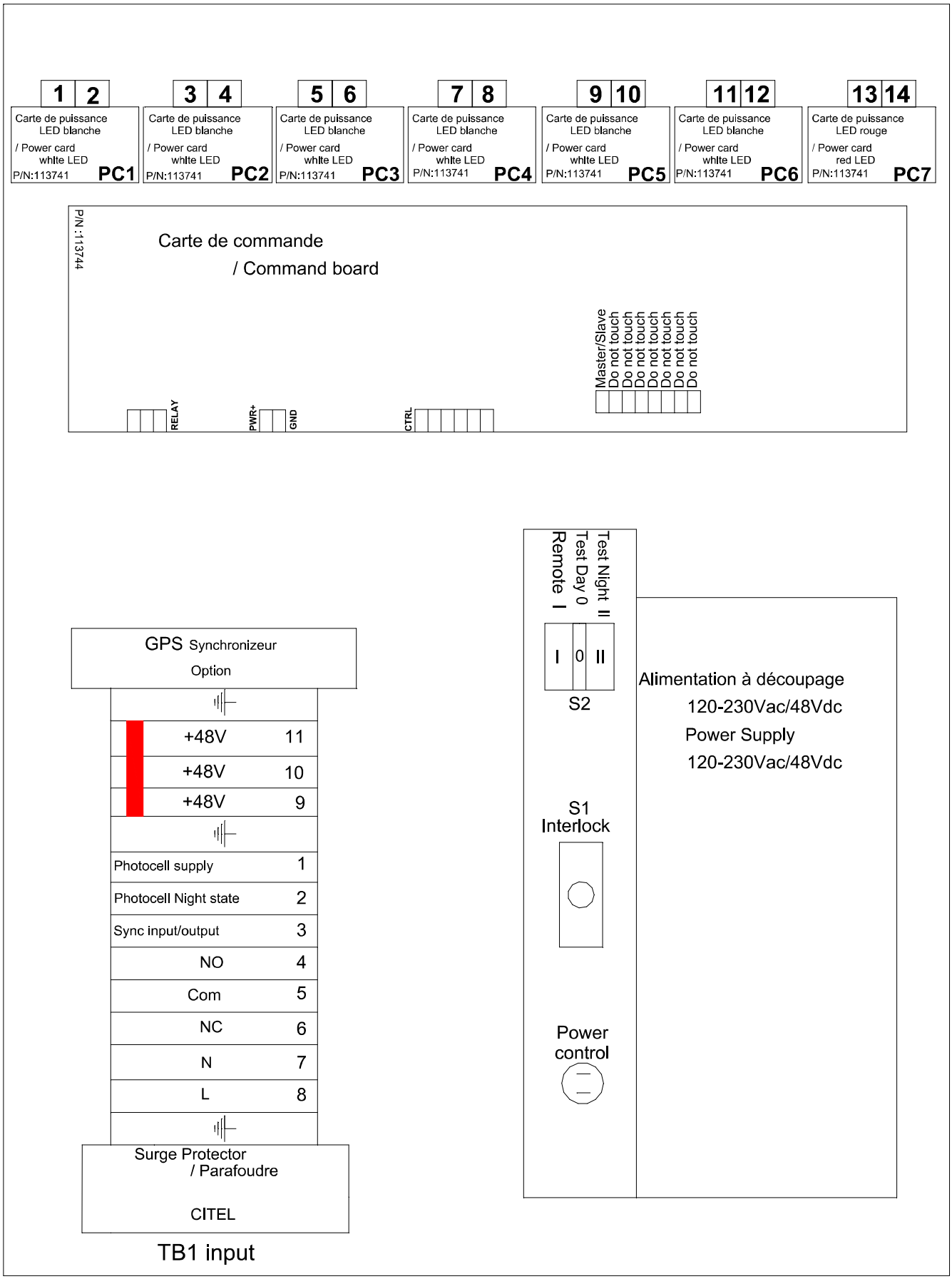


Figure 1-1. POWER SUPPLY COMPONENT LOCATIONS
The location of the components can changed depending on the specific demand

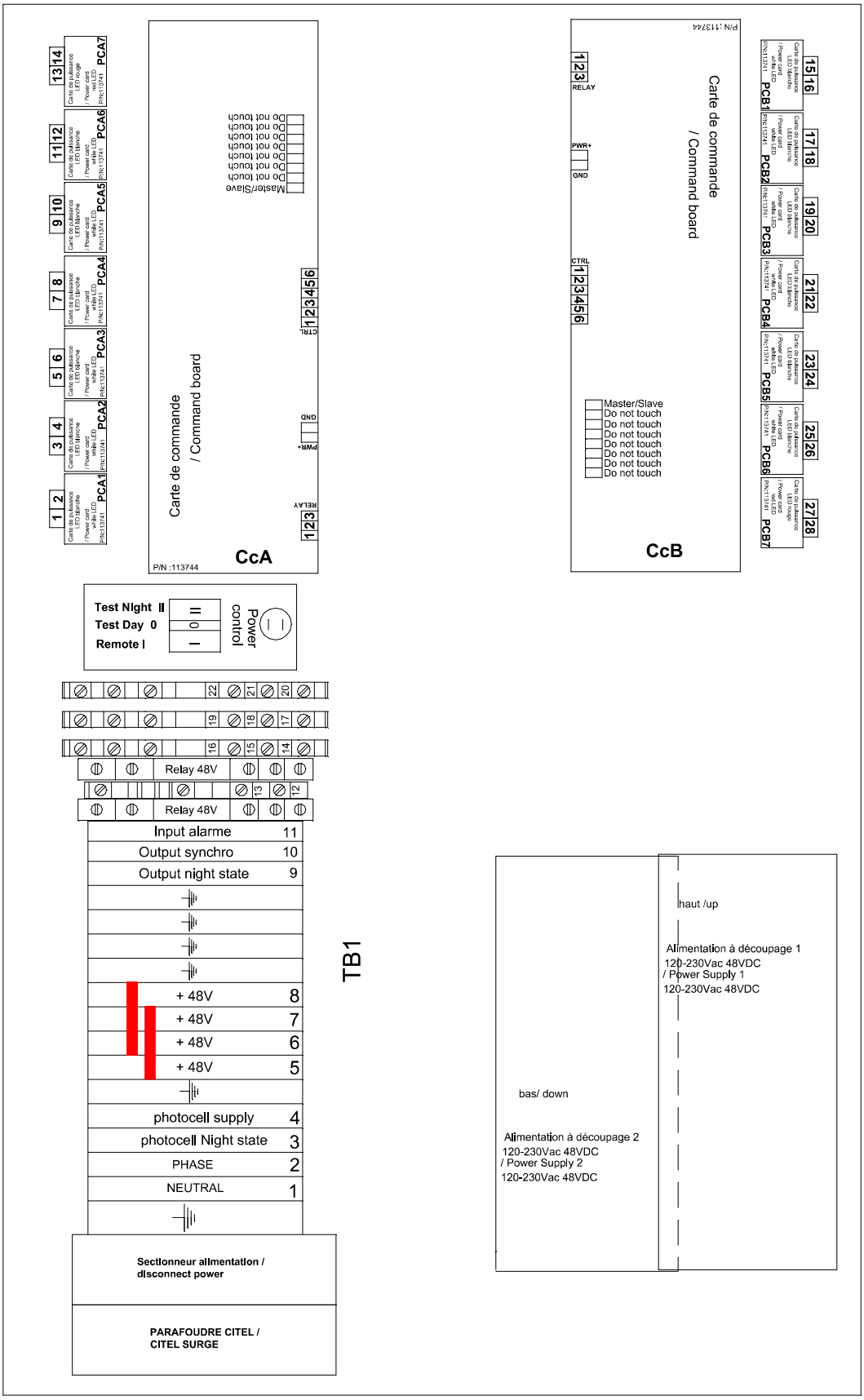


Figure 1-2. POWER SUPPLY COMPONENT LOCATIONS
The location of the components can changed depending on the specific demand

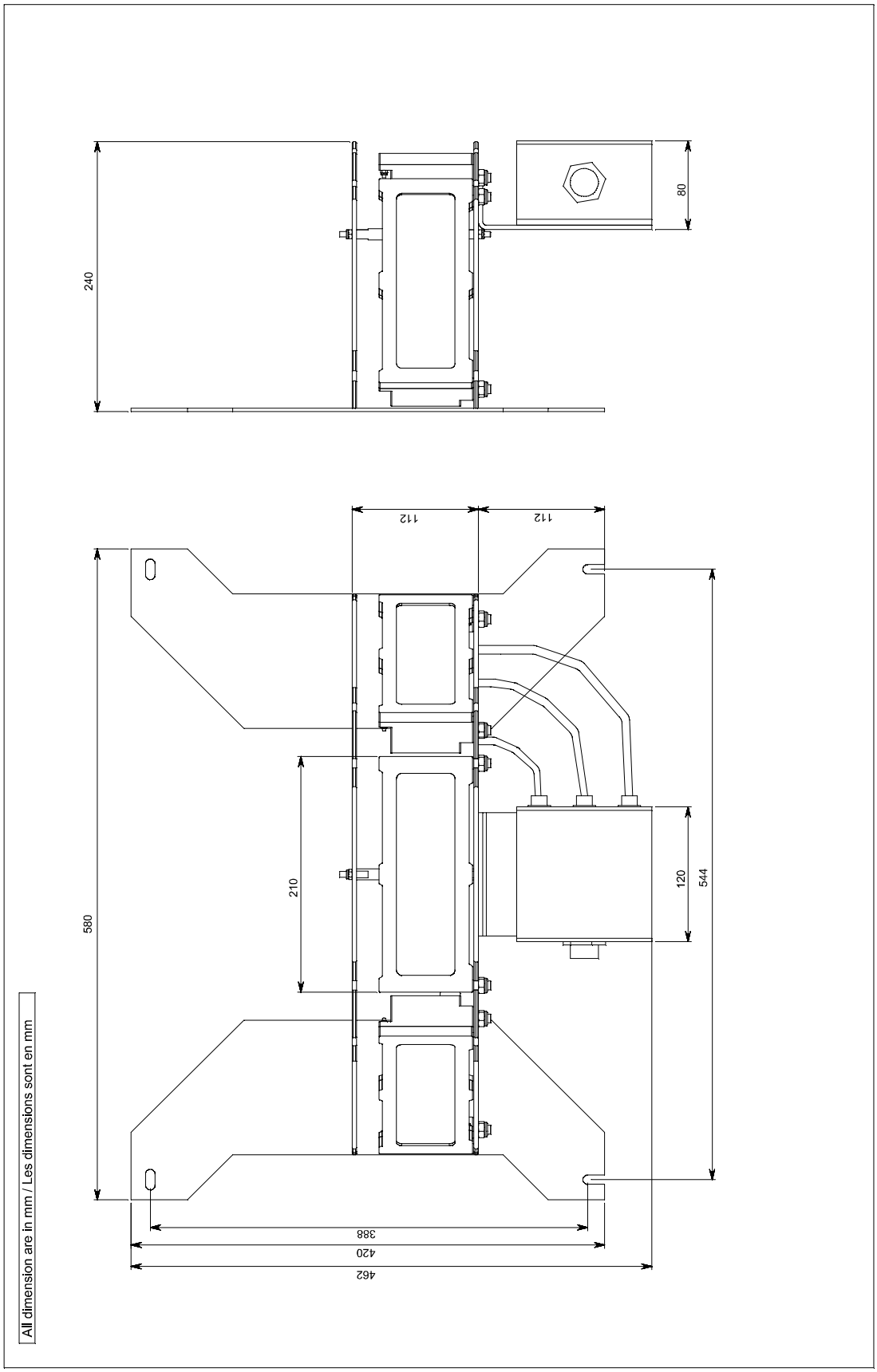


Figure 1-3. OBSTAFLASH 180° COMPONENT LOCATIONS

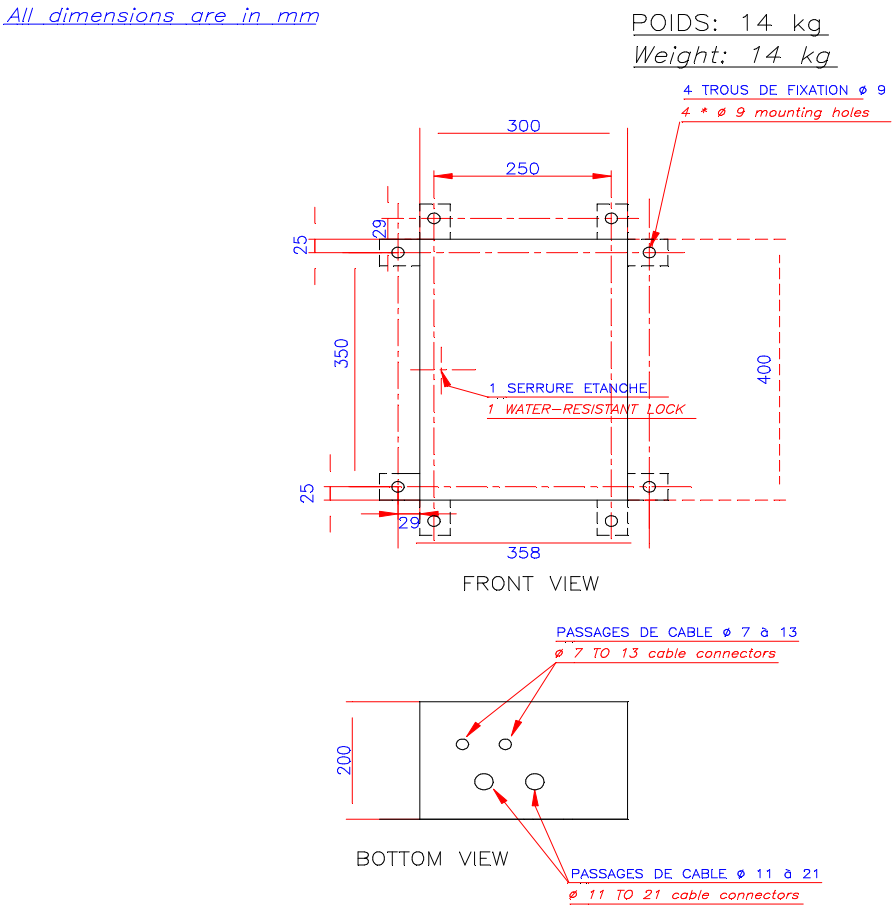
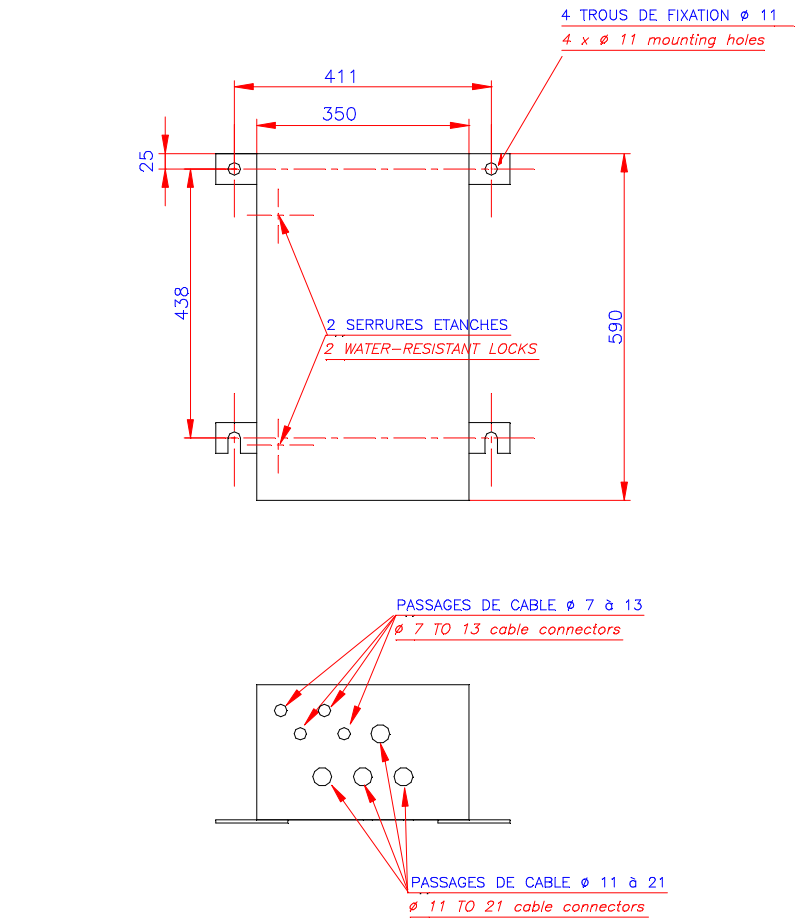


Figure 1-5 POWER SUPPLY 113733-6P-2E

The size can vary depending on location of the components

All dimensions are in mm



Matériel : Inox 316L ep. min. 2mm
Material : Stainless steel thickness min. 2mm

Figure 1-5 POWER SUPPLY 113739-P12-4E
The size can vary depending on location of the components

ENCOMBREMENT
DIMENSIONS (in mm)

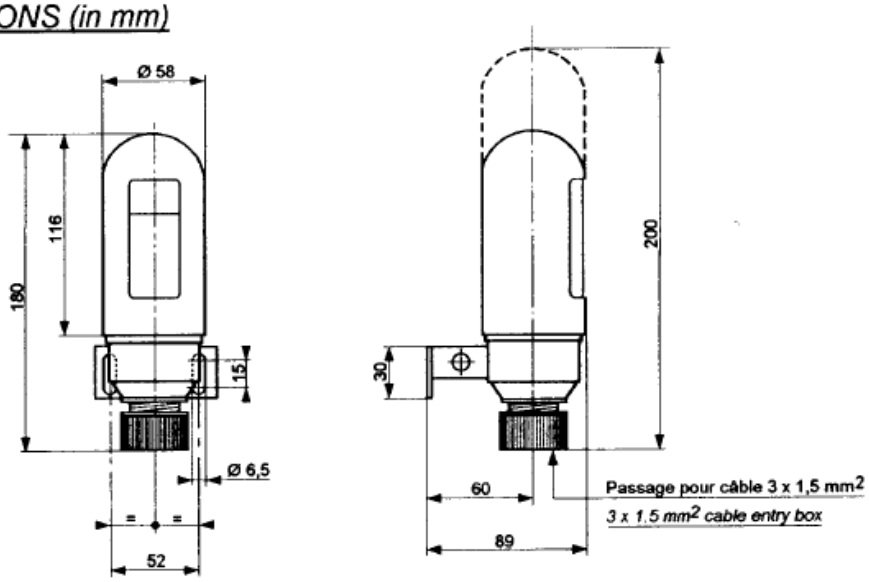


Figure 1-5 Size and dimensions of the external photocell (option).

1.3 SPECIFICATIONS

1.3.1 LIGHT OUTPUTS

Red White day 20 000 ±25% effective candelas, single flash
Red night 2 000 ±25% effective candelas, single flash
Beam Pattern..... 180º horizontally; >3º vertically
Flash Rate: .....20 or 40 fpm

1.3.2 ELECTRICAL INPUT

Power Supply…….120/230 VAC +/-10%
Current max .....1.6A (day mode), 0.3A (night mode)

1.3.3 MECHANICAL PROPERTIES

Flashhead 180°
Weight.....10 kg
Dimensions .....l = 580 mm x w=240 x h=462 mm
Surface Area 870cm²
Wind Load .....35 kg at 240 Km/h

Power Supply 113733-6P-2E
Weight .....14 kg
Dimensions..... w = 300 mm x h = 400mm x d = 200 mm

Power Supply 113739-P12-4E
Weight .....23 kg
Dimensions..... w = 350 mm x h = 590mm x d = 250 mm

1.3.4 OPERATING ENVIRONMENT

Operating Temperature .....-40ºC to +55ºC
Humidity ..... 95% relative humidity

1.3.5 SYSTEM OPERATING STATUS INDICATORS

Inside the power supply:
-1 red indicator for the incoming main power supply with a test button S2
- On command card: 10 luminous indicators see figure 2-1
- Fault indications: Relay closure; contact rating of 3A at 220VAC.

SECTION 2 : PRINCIPLES OF OPERATION

2.1 Power supply P/N 113733

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 14 power cards that regulate the current sent to the 24 white led circuits and 2 red led circuits as per figure 2-2:

- 12 power cards for white led circuits: each card regulates the current of 2 white led circuits of the same projector during daytime;
- 2 power card that regulates the current of the 2 red led circuits during night time; each red led circuit is in serial with 3 projectors.

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 command card is powered in 48V and allows to:
- monitor the 7 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.

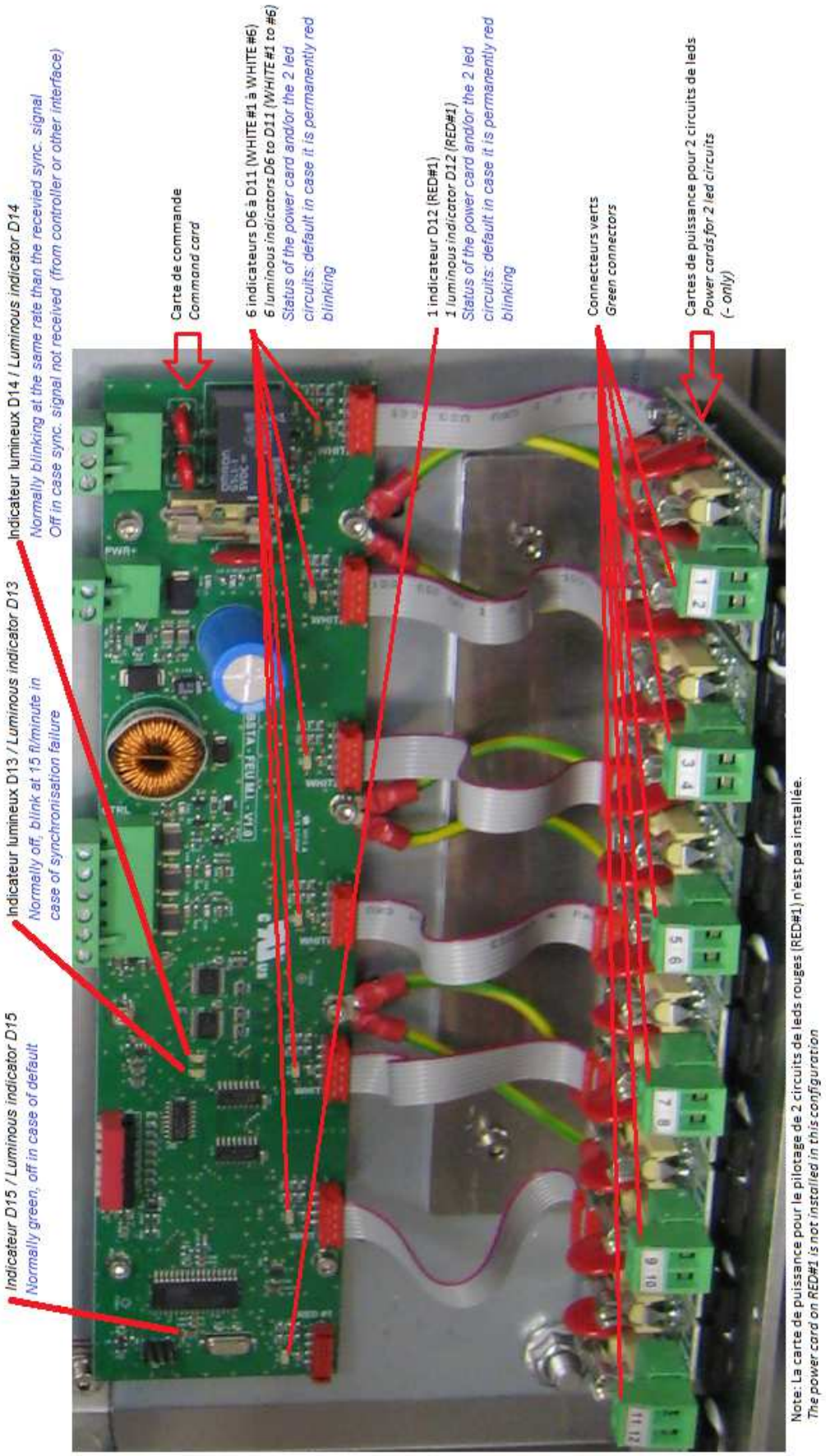


Figure 2-1. LUMINOUS INDICATORS ON THE COMMAND CARD

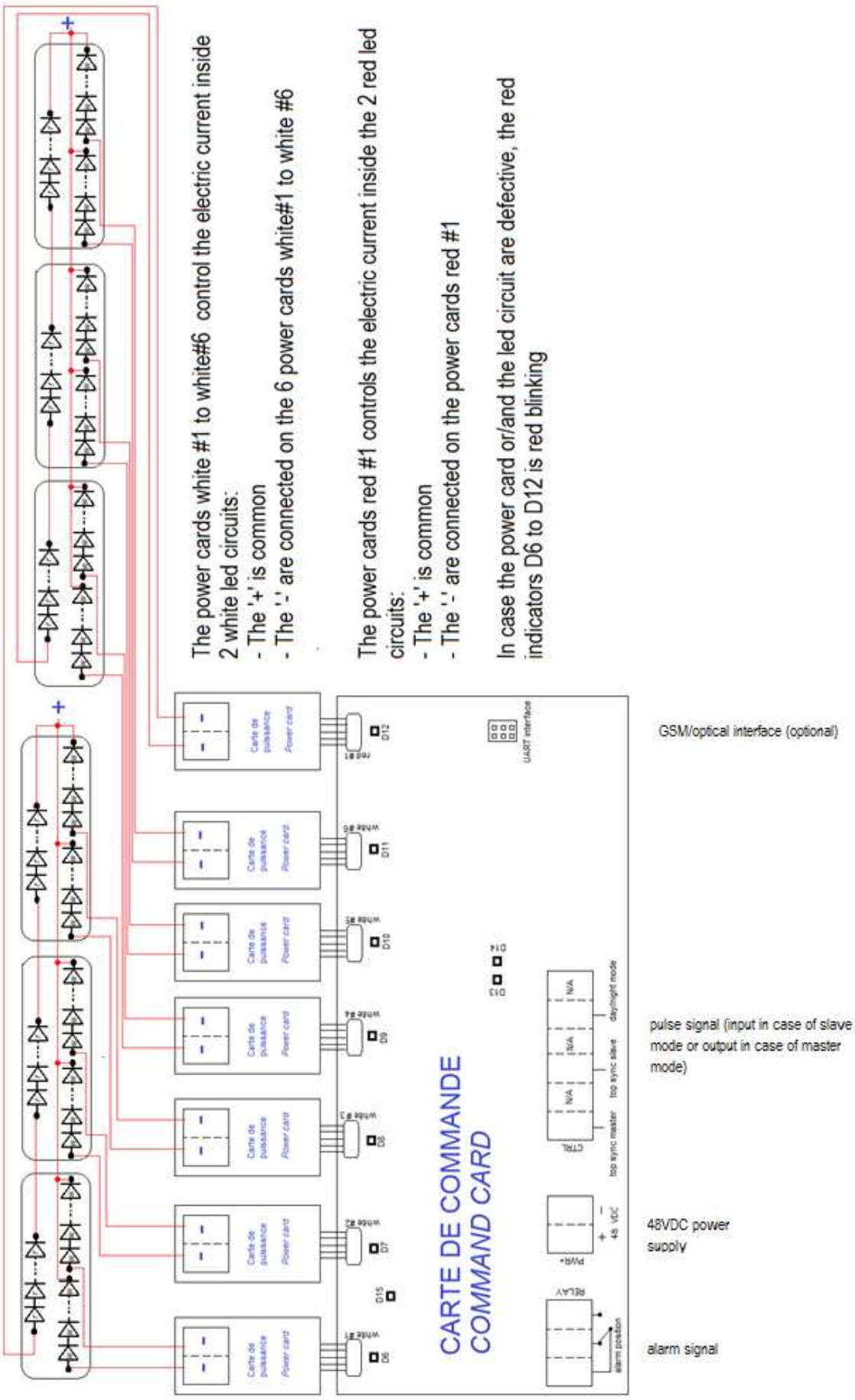
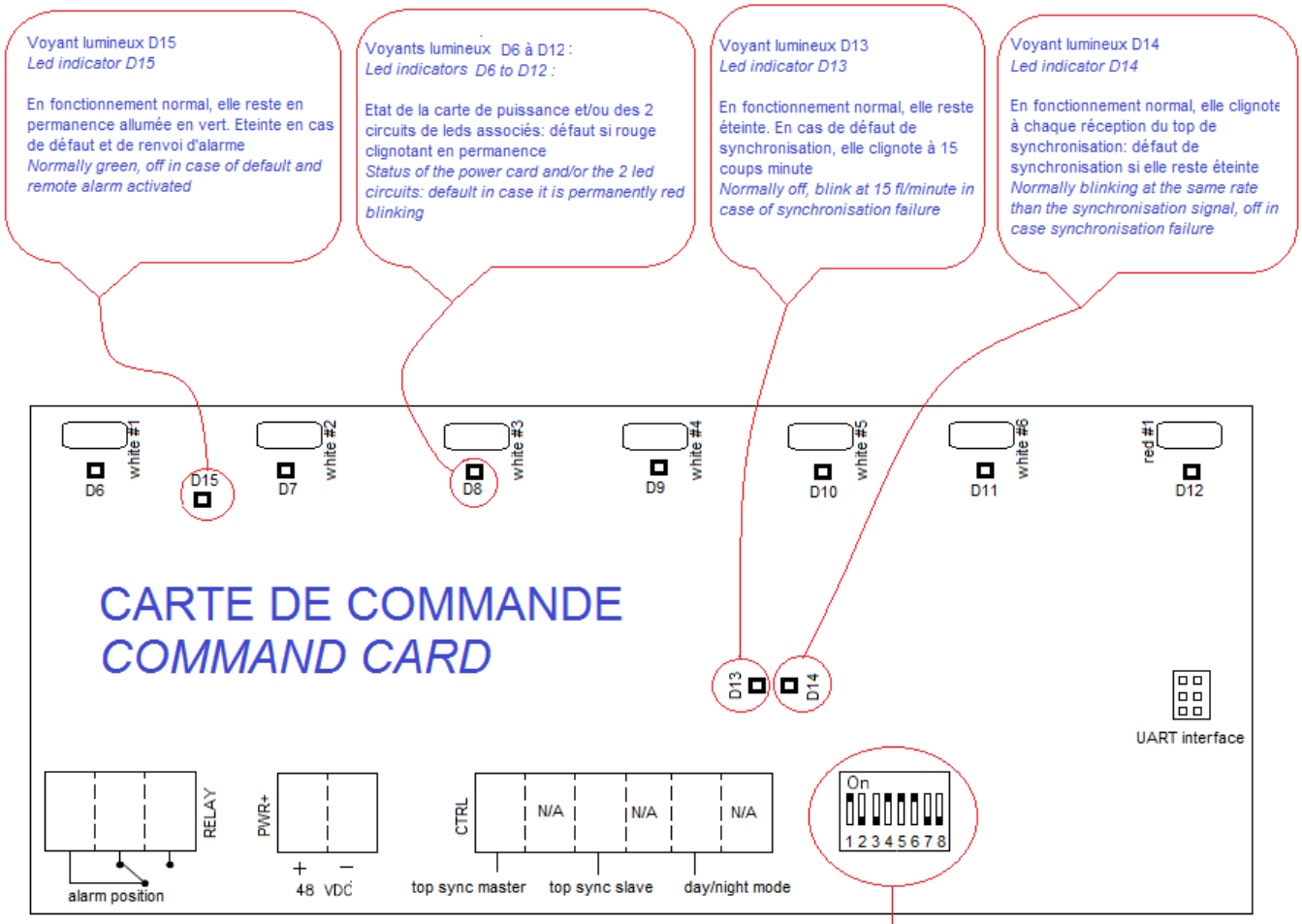


Figure 2-2. WIRING OF LED CIRCUITS ON THE COMMAND CARD



		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)*

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

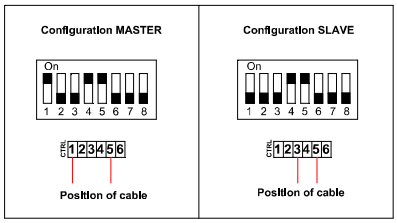
Figure 2-3. COMMAND CARD

2.3 Photocell P/N100755

When included in the system, the 48V photocell allows automatic change light intensity and/or color between day and night. The photocell sent this information to the command card by a 0V or a 48V signal (max 53V).

2.4 Synchronization of multiple systems with cable

In case 2 or more systems are installed on the same location, ICAO and FAA request that all lights should be synchronized. In this case, one cabinet should be configured as the master and the other as slaves (dipswitch n°1 on figure 2-3 page 14). The photocell should be wired on the master cabinet only. The 2 cabinets (or more) should be connected together through a shielded cable 3x1,5mm² through TB1 on “Sync input/output”, “Photocell Nigh state” and ground position.



2.5 Wireless synchronization with GPS P/N 113746

In case it is not possible to install a cable between each cabinet, a GPS can be installed inside each cabinet for the synchronization. This GPS from OBSTA is a DIN rail module that includes 2 led indicators and 2 outputs and comes with an external magnetic antenna coming with 5 meters cable. When the GPS is connected to the satellite (usually 5 to 15 minutes after switch on the power supply),

- The green led indicator blinks: it indicates that the pulse sync. is received from the satellite and sent to the command card and D14 should pulse at the same rate,
- Without external photocell, the day/night mode can also be controlled by the GPS: the red led is off during day time and on during night time and the information is sent to the command card.

In case no signal from the GPS is sent to the command card (5 to 15 minutes after switch on the power supply), the command card forces the system in night mode and pulse at 15 flashes per minute: D13 blinks at 15 fl per minute and D14 is off.

When GPS is synchronized and signal received by the command card, D13 is normally off and D14 blinks at the pulse of the GPS.

SECTION 3 : INSTALLATION

3.1 Unpacking

Carefully unpack each item and remove any internal packing material from the power supply, the batteries and the beacons. Examine each item for obvious physical damage. Report any claims to the carrier immediately.

3.2 Mounting and Preparation

3.2.1 OBSTAFLASH beacons

The lights are usually mounted at the highest point on the structure on a vertical platform, or as per requirements of the local Aviation Regulation authority in place at the installation location.

3.2.2 Connection of the beacon to the power supply

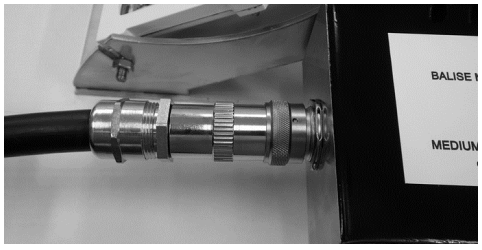
3.2.2.1 Connection of the 6 led projectors to their junction box or the their power supply

Each beacon includes 6 dual color projectors with molded cable and plug at their extremity that are already connected on the junction box or on the power supply. **However in the event that they should be disconnected, it is very important that the 6 plugs of each projector be correctly mounted and tightened in the 6 sockets of the junction box and also scotch added.**

3.2.2.2 Connection of the interconnecting cable P/N 113762 to the junction box (option)

The interconnecting cable P/N113762 provided by OBSTA comes with a plug on one side to be connected on the junction box

Connection of the cable P/N13762 on the junction box:



3.2.2.3 Connection of the interconnecting cable P/N 113762 to the power supply (option)

Entries of cables are on the lower side of the power supply**.**

3.2.2.4 Connection directly with cable (option)

With certain systems , the end user will use directly the standard shield cable.

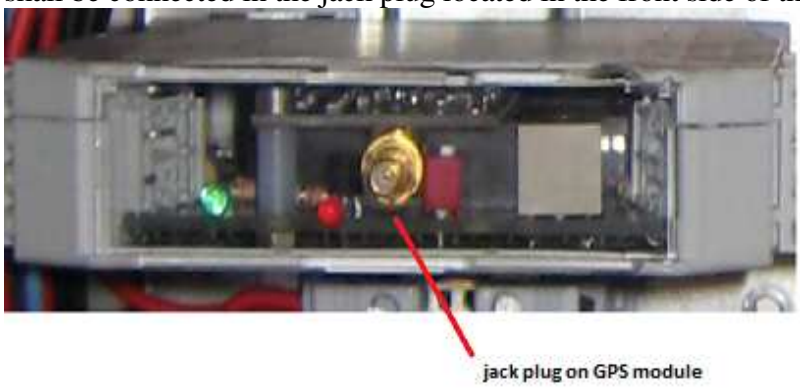
WARNING: It is very important to respect the wiring of the cable P/N 113762 or between the standard cable to TB1 and the 7 power cards in the power supply and the junction box.

3.2.3 Photocell

If included in the system, the ambient light sensor (photocell) should be mounted upright, away from artificial light (such as 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).
Make the connection of the external photocell and the power supply to **TB1 in the power supply as per figure 3-1 page 18**.

3.2.4 GPS antenna (option)

If GPS included in the system, the magnetic antenna of the GPS should be mounted on a ferrous metallic part without an unobstructed view to the sky. The 5 meters cable provided with the antenna shall be connected in the jack plug located in the front side of the GPS module.



3.3 120VAC to 230VAC Power cable

Make the connection of the AC power supply to **TB1 in the power supply as per figure 3-1 page 17 and figure 3-2 page 18**

3.4 Final Check

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

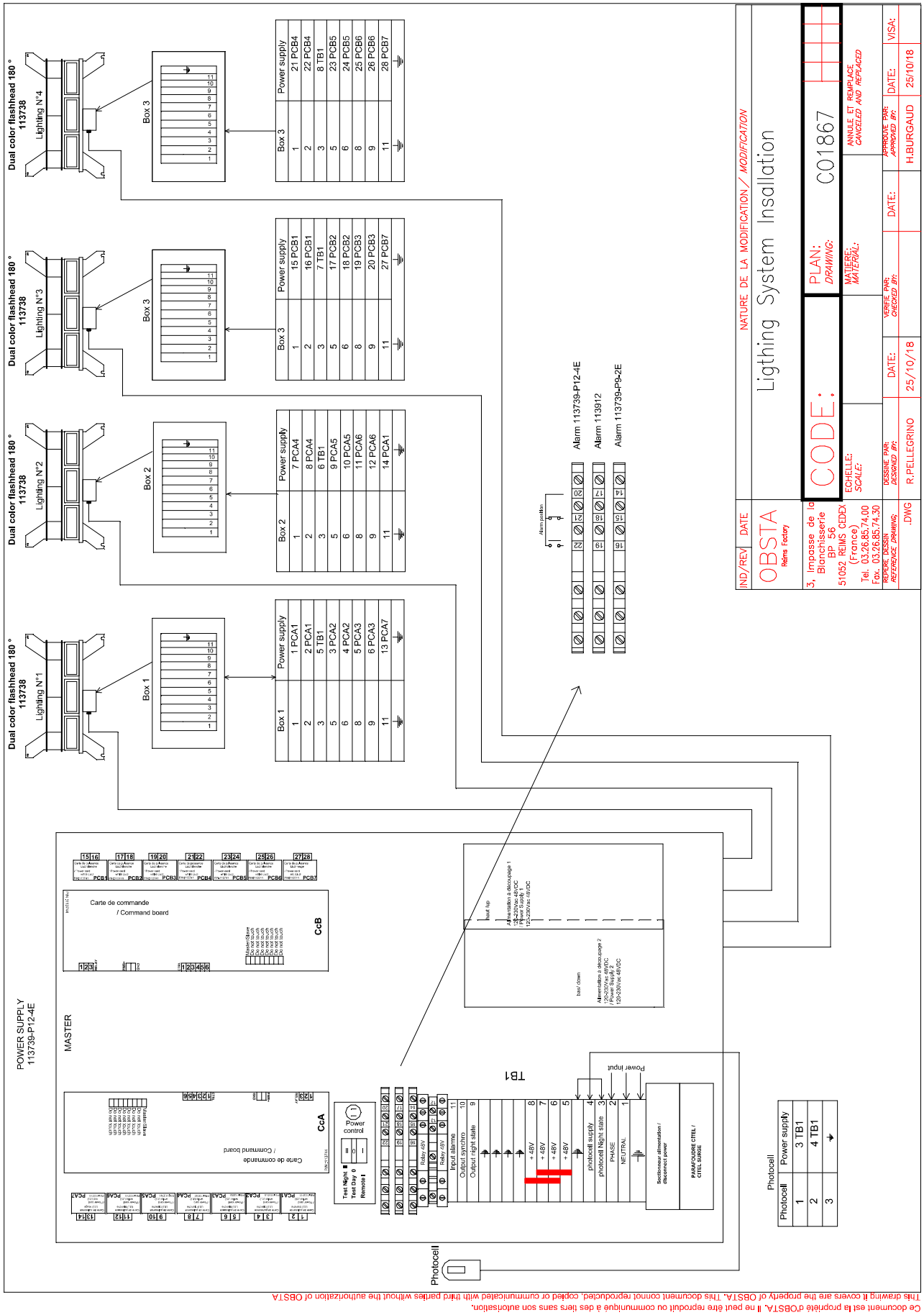


Figure 3-1. TYPICAL WIRING DIAGRAM WITH SYSTEM

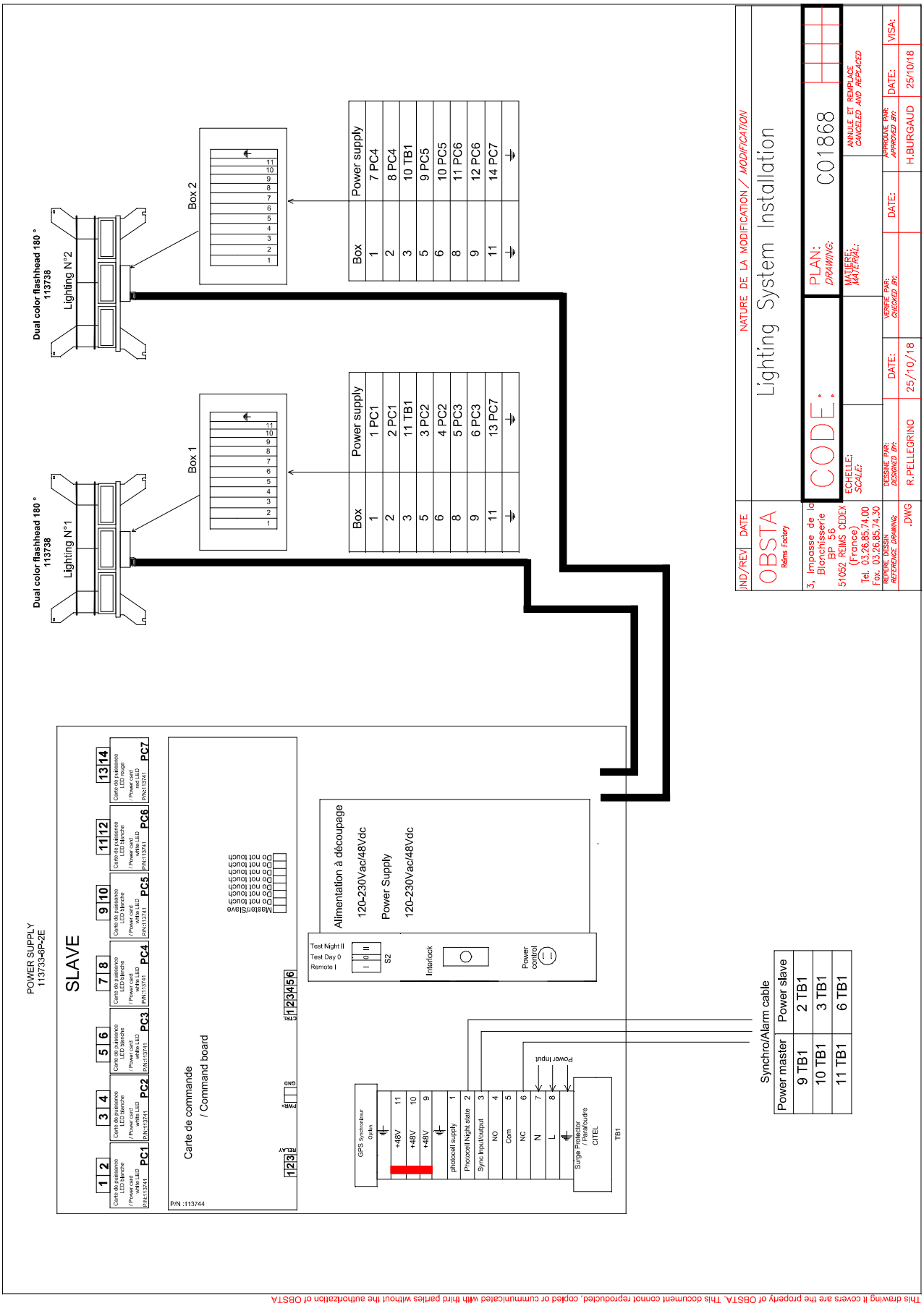


Figure 3-2 TYPICAL WIRING DIAGRAM WITH SYSTEM

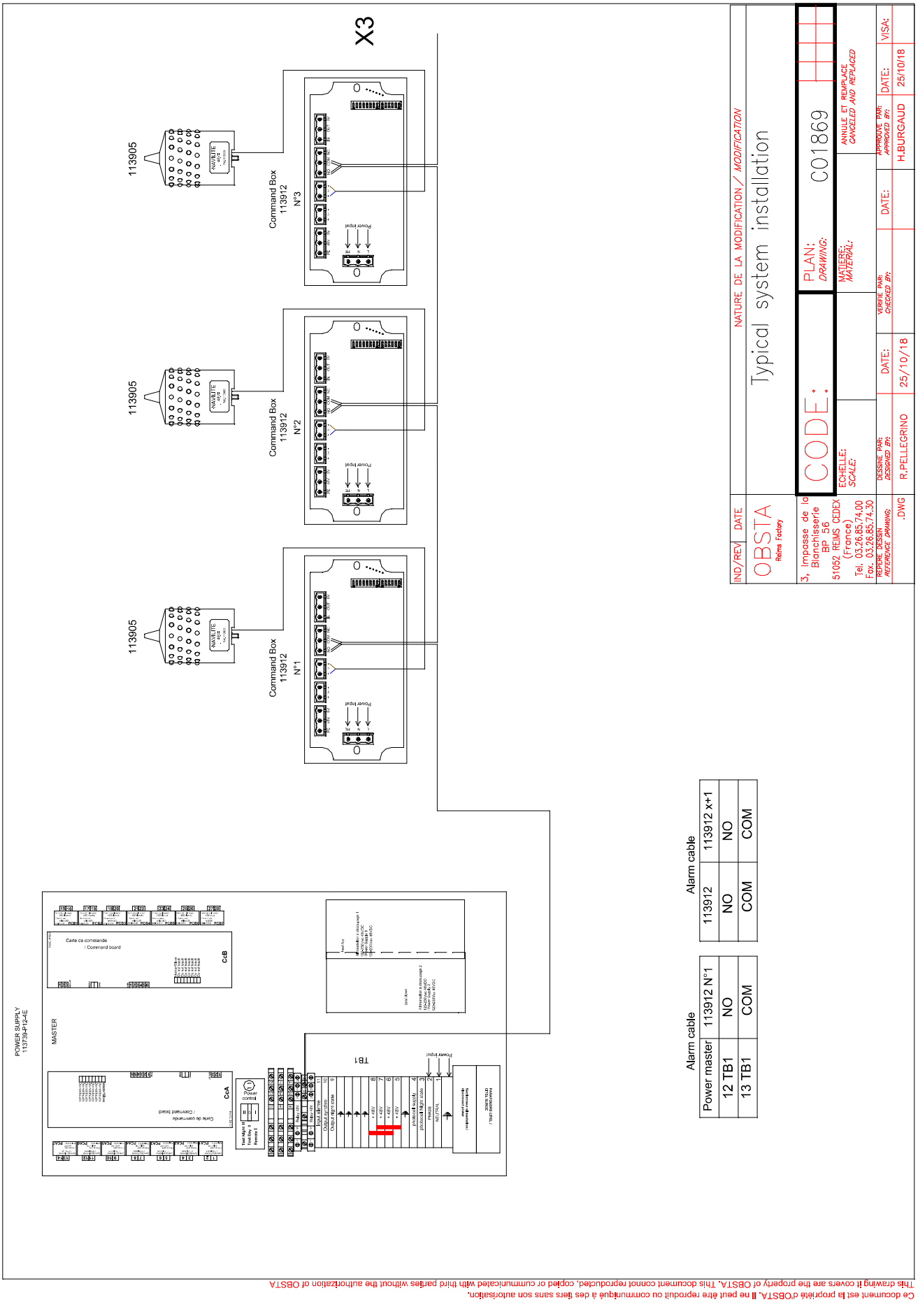


Figure 3-3 TYPICAL WIRING DIAGRAM WITH SYSTEM

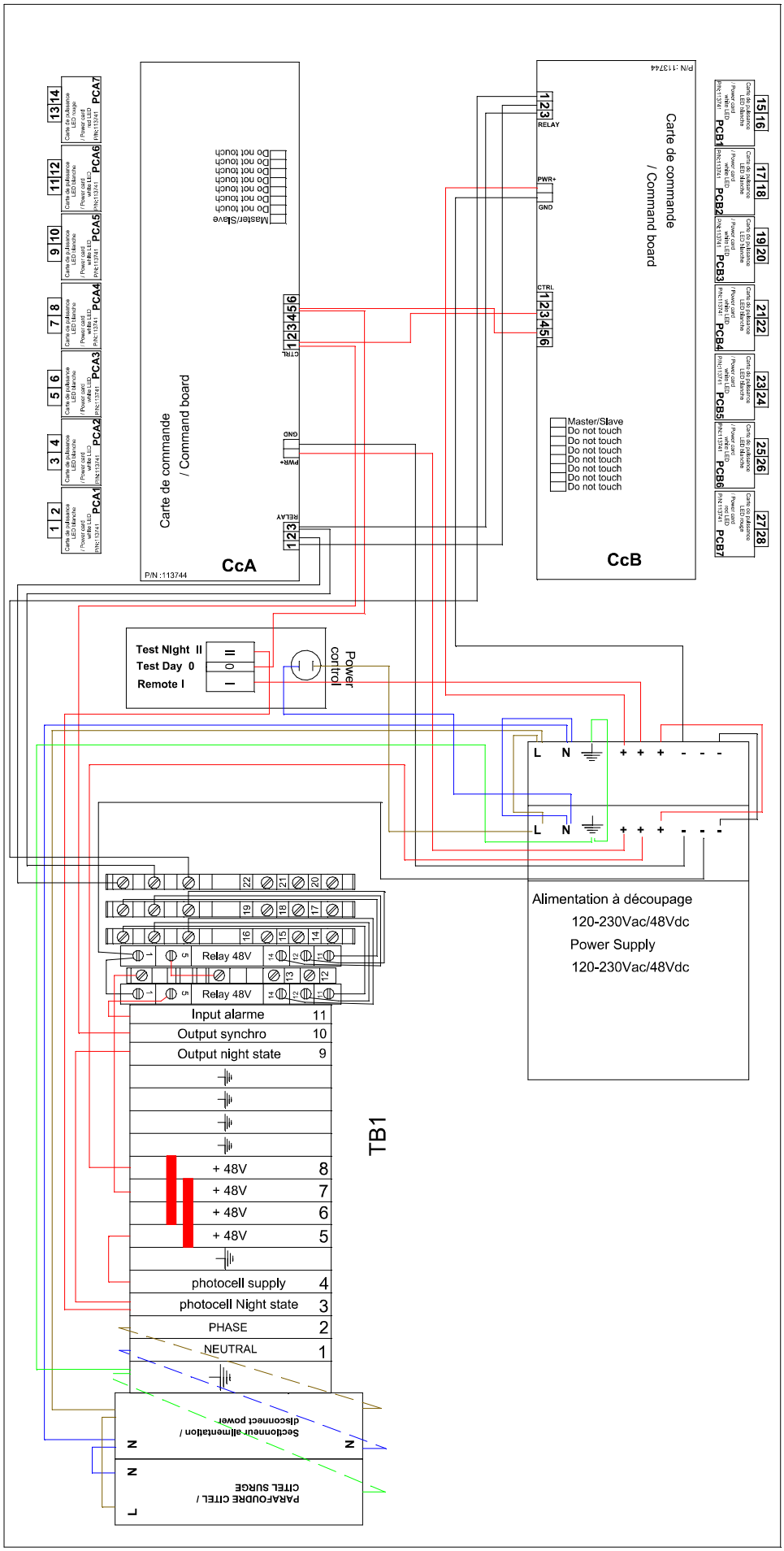


Figure 3-4 WIRING DIAGRAM 113739-P12-4E

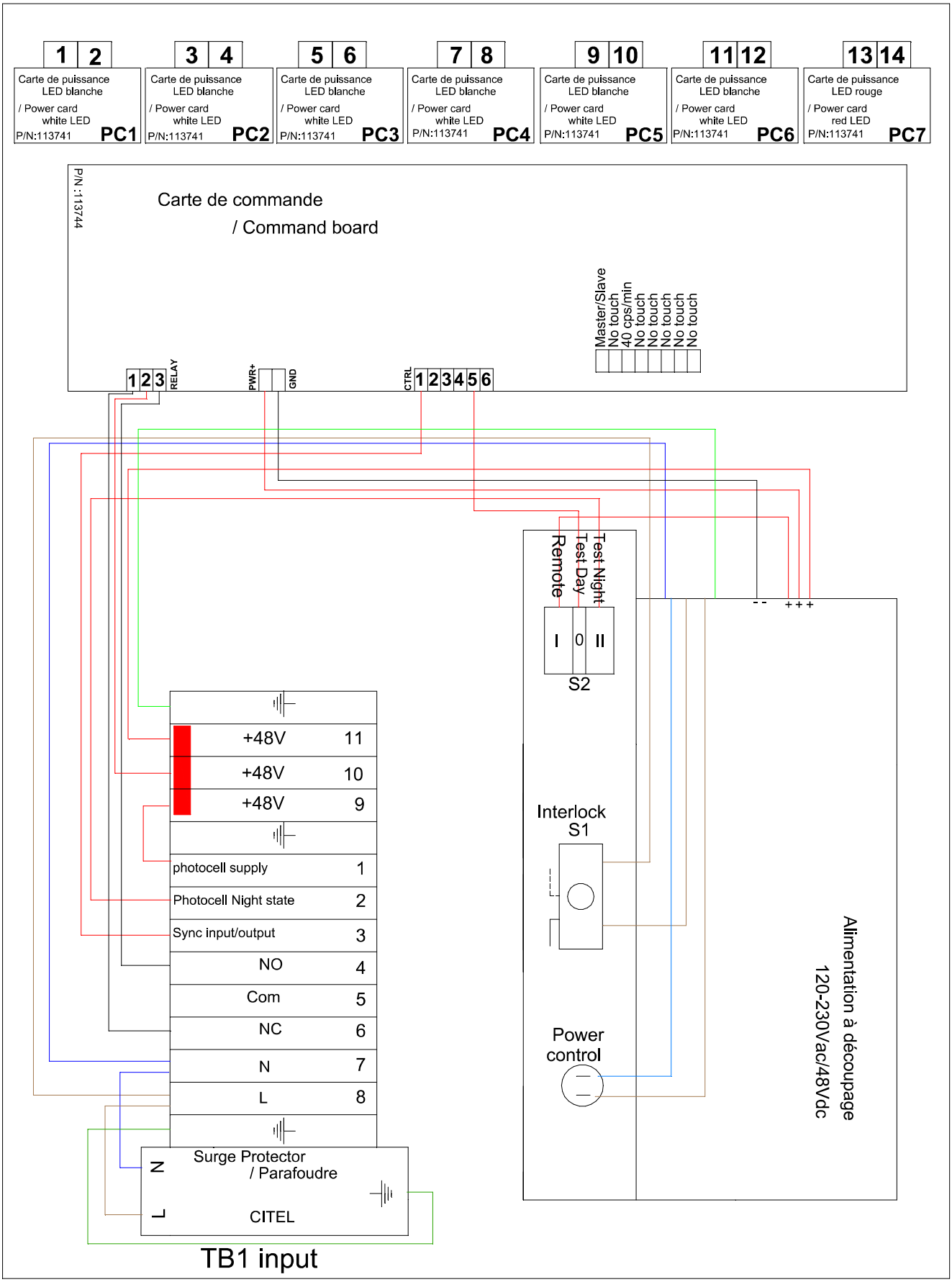


Figure 3-5 WIRING DIAGRAM 113739-6P-2E

SECTION 5 MAINTENANCE - TROUBLESHOOT

5.1 Maintenance

Test	Frequency	Action	Sanction	Solution
Cable & connectors	Annual	Tight the 6 connectors of each connectors and tight the wires on TB1 inside the cabinet. Check the tightness of the wires in the junction box and in the power box		
Waterproof	Annual	Visual(each projector)	No water inside	Replace projector
Corrosion	Annual	Visual	No excessive corrosion	Replace the defective parts
Photocell	Annual	Clean and mask the window of the photocell	No day/night change after 10 seconds	Change photocell
Projectors	Annual	switch S2 to « Test Day » & « Test Night »	D6 to D12 not red and the projector flash normaly	Replace the power card or/and associated projector as per procedure (*) below
Projectors	10 years	Replace		

5.2 Troubleshoot - malfunction

	Action	Solution
Voltage indicator is off	Check input voltage, surge protection and switch gear. Otherwise check 48VDC is present on the power supply output and position of disconned power.	Replace the defective parts if necessary (surge protection, fuse or power supply)
Some projectors are simultaneously white and red	The order of the wires of the cable P/N113762 connected on the power cards 1 to 14 is wrong, check them according to the main wiring diagram	No modification, contact the manufacturer
The system is permanently white flashing or red	Check that S2 is on « Remote » position. The system change white and red. Otherwise masks the window of the photocell to check day/night switch and check the wiring connection of the photocell according to the wiring diagram	Check that the wiring complies with plan n on page 17. (between the power supply and the lamp and also between the power supply and the photocell. Replace photocell if necessary
Some luminous indicators D6 to D12 are blinking red in day and/or night mode	Check the wiring connection on the related power card. Otherwise check the power cards and the projector following procedure (*) below	Replace power card or/and the related projector if necessary
D13 blinks and D14 is off	Check the wiring of the GPS, the position of its antenna and its wire connection. If gps green indicator still do not blink 10 to 15 minutes after power is on, gps module should be changed.	Replace GPS module if necessary

Contact the manufacturer if necessary

*** Procedure to test the power cards and the projectors:**

- D6, D7 or/and D11 is/are blinking red: 1 or more projectors are not working in white

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

-D12 is blinking red: 3 or 6 projectors are not working in red

If the 6 projectors not working in red, change the power card,

If 3 projectors are not working, disconnect their related circuit from the green connector of the power card and connect it to the second green connector of the power card: If the 3 projectors are ok, change the power card otherwise you have to test which projector out of the 3 projectors is not working

SECTION 6 – SPARE PARTS

Beacon-obstaflash

PROJECTOR-RW-0.75..……..…..……..113761

Power supply

COMMAND-CARD-48VDC-6P-RW…….……....113744
POWER CARD 48VDC..…….……113741
SECURITY SWITCH AND TEST BUTTON……...113743
PHOTOCELL 50LUX 48VDC……..100755
DS215-230/G…….…..…….. 451721
POWER SUPPLY 230VA 600W…….....…….113742

Cable

Special Shielded outdoor cable (white only or dual color)..…….113762

GPS interface (option)

GPS-24/48-I…… ……..…….113746