

RELIABILITY IN OBSTRUCTION LIGHTING
BALISAGE AÉRIEN

Red medium intensity system for transmission line



Operation and user guide:

OFC-RI-REM and OFC-CTR-048-3 (configuration CONFIG-MI-Type C-1Top+2Int)

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1 PRODUCT NAME AND PART NUMBER

Designation	Type	Power supply	Part number
OFC-CTR-048-3	Controller for 3 flash-heads	48Vdc -5%; +10%	113176-048-6
OFC-RI-REM	Red medium intensity flash-head		113790RI-REM
Photocell	Calibrated photocell for day/night switch	12Vdc-60Vdc	100757-KIT

The controller OFC-CTR-048-3 contains:

- 3 command cards (1 PCBa per flash-head) P/N **113790RR-CMD-048**
- an IoT gateway PCBa P/N **114802**
- a test button to bypass photocell and IoT and force day or night mode
- terminal connection and relay DIN rails mounting

2 BE CAREFUL



- 1) Do not proceed any maintenance job when the light is under operation
- 2) Power supply must be shut down when opening the flash-head
- 3) Installation must be performed only by electrically skilled operator and National electrical installation rules must be respected.
- 4) Do not look directly at the projector while it is in operation : Led projectors produce brilliant flashes of lights which can result in temporary or permanent eye damage



3 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.

4 GENERAL INFORMATION

4.1 Scope

This manual provides information about the installation, operation, and maintenance of the OFC Red Medium Intensity Obstruction Lighting Systems manufactured by OBSTA 48VDC system. The lighting systems described in this manual are Medium intensity type B obstruction lights

4.2 General description

The OFC is an LED medium intensity system manufactured to comply with ICAO annex 14 chapter 6.

The 3 OFC P/N **113790RI-REM** includes :

- A light flash-head with 6 luminous parts .
- A Lamp holder and an interface (Cable gland + terminal connection on the PCB)

The attachment of the flash-head is done with 2 latches. Waterproof is done through an O-ring between the flash-head and the lamp holder. The power supply is located at the bottom of the obstacle in the controller

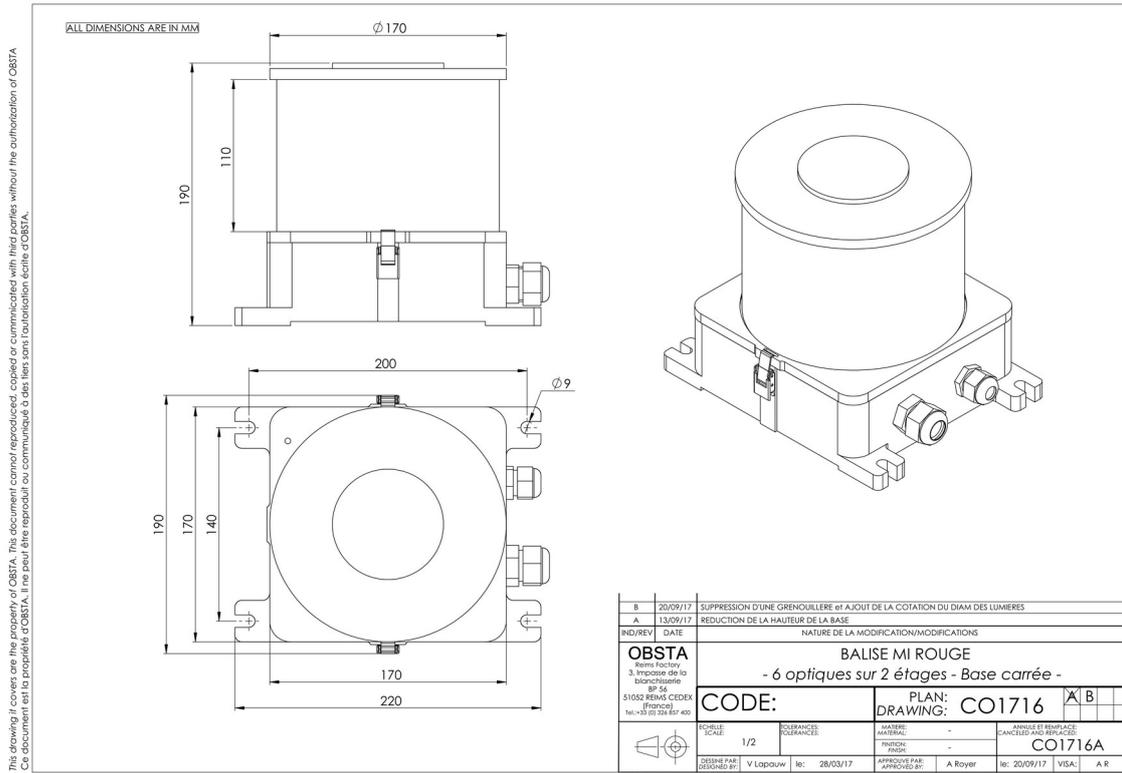
The controller P/N **113176-048-3** contains:

- 3 command cards (1 PCBa per flash-head) P/N113790RR-CMD-048
- an IoT gateway PCBa P/N114802
- a test button to bypass photocell and IoT and force day or night mode

and the terminal connection to

- the 3 flash-heads P/N 113790RI-REM (3 levels of 2 lights)
- the external photocell P/N 100757-KIT
- the 48VDC battery cabinet (DSO option) or the 48VDC solar kit

4.3 Size of the OFC P/N113790RI-REM

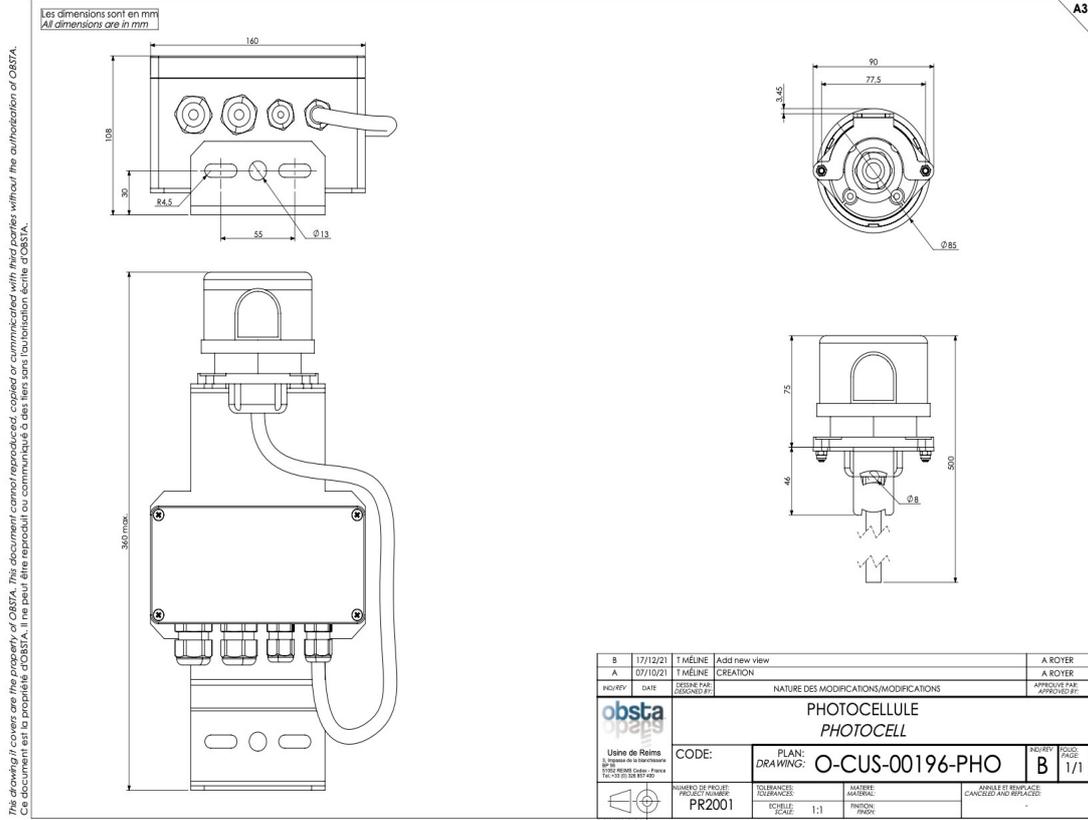


4.4 Size of the controller P/N113176-048-3

The size of the controller is 750mm (height) x 750mm (width) x 420mm (dept)

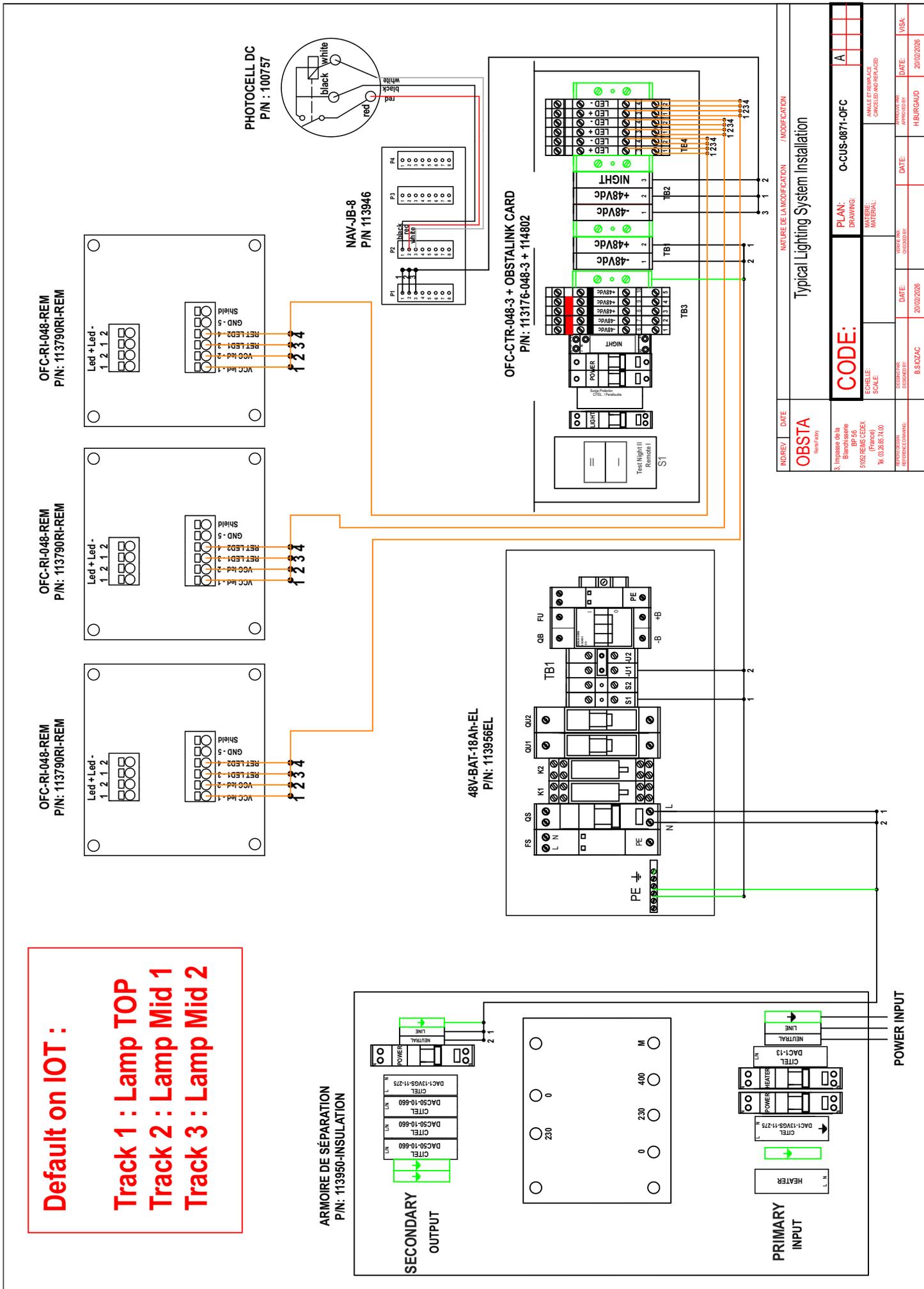


4.5 Size of the photocell P/N100757-KIT



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4.6 Wiring diagram of the lights with controller and photocell



5 TECHNICAL SPECIFICATION

5.1 Light output of each flash-head

Intensity :	red 2000cd
Beam pattern :	360° horizontally; 3°min vertically
flash per minute :	RED FIXED MODE
	Day/Night mode through external photocell
Alarm	Free contact (Relay 1A 250Vac max)

5.2 Electrical input of each command card + flash-head

Voltage :	48Vdc -5%; +10%
Average Power :	30W per flash-head
Peak VA:	54.3 @ 48Vdc
Max current :	1A @ 48Vdc
Wiring :	Cable glands: Ø7 to Ø13mm
	Terminal connections for power wires: max 6mm ² - 12awg
	Terminal connections for signal wires: max 1.5mm ² - 16awg

5.3 Mechanical properties of each flash-head

Weight	5 kg
Size (hxlxl)	190x190x220 mm
Attachment	M4 x4 (200x140 mm)
Surface area	~350 cm ²
Wind load	10 kg max (@240km/h)

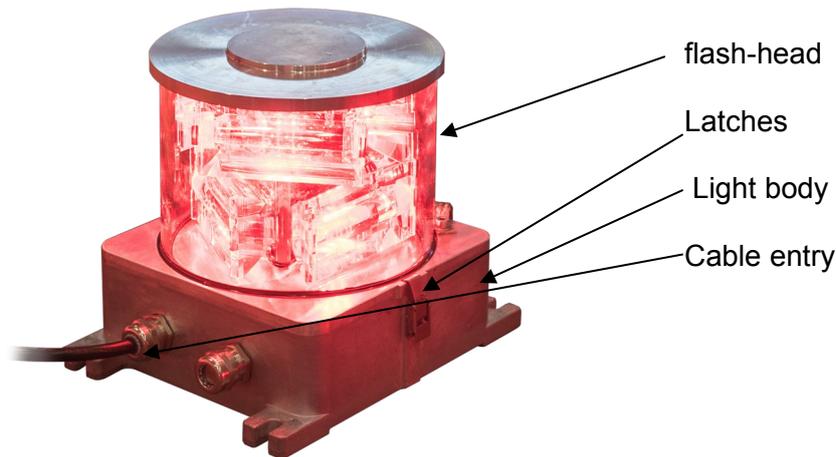
5.4 Operating environment

Operating temperature	-30°C to +55°C
Humidity	95%
Protection rate	IP66

6 Principles of operation

6.1 System components

6.1.1 flash-head 113790RI-REM



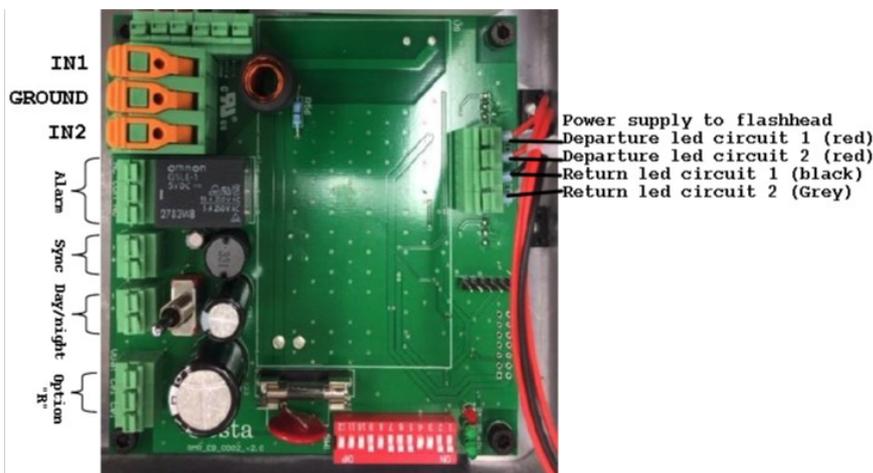
The flash-head includes 6 optics and 6 led strips that ensure the light output of the light. Each flash-head do have 2 independent led circuits.

The sealing of the light is ensure but the 2 latches and the O-ring between flash-head and the light body.

The light body contains the PCB to connect the 5G cable going down to the command card. It is very important to ensure the O-ring is placed correctly while closing the flash-head

6.1.2 Command card 113790RR-CMD-048 (PCB inside the controller) for each flash-head

Each flash-head is monitored through one command card that is located inside the controller



The command card of each flash-head ensures:

- The conversion of the power supply input
- The control of the current of the 2 led circuits inside the flash-head
- Setting of the light (master or slave) and its configuration (medium intensity type B)
- Synchronization of the flashes
- Alarm

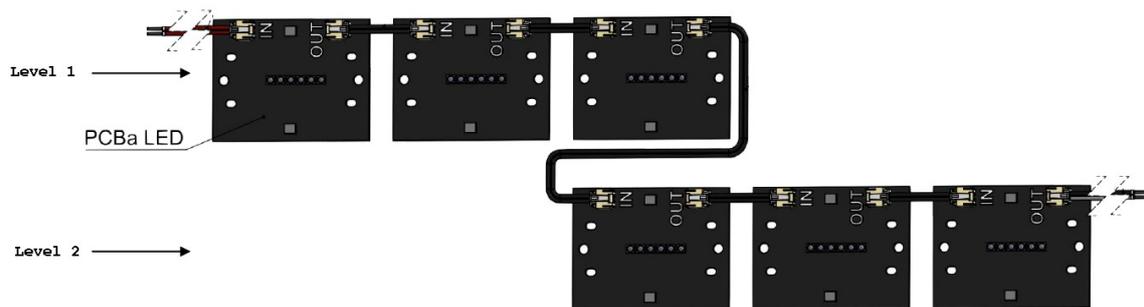
6.1.3 [Shunt braid](#)

The flash-head is attached to the light body through a shunt braid :

- Assure the grounding of the light
- prevent loosing the flash-head during installation

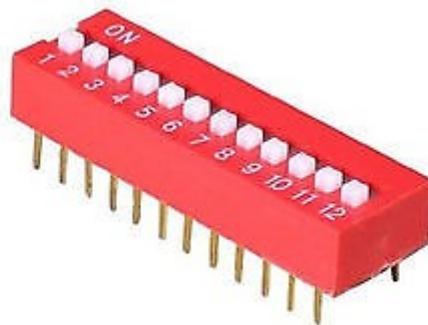
6.1.4 [PCBa LED inside the flashhead](#)

Inside the flashhead, each level contains 3 PCBa LED. Each PCBa LED contains one circuit with 3 red leds and one circuit with 2 red leds + 1 infrared led



6.2 [Configuration on the command cards P/N113790RR-CMD-048](#)

The setting of the light is done through the dip-switches on the command card.



Switch #	Default Value		Function	Comment
	ON	OFF		
1	X		Normal / Reset	Switch to reset the light and alarm (to be used only for maintenance)
2	X		Master / Slave	Slave mode (to be used for flash synchronization), the light waits for the pulse coming from the GPS
3		X	Over ride circuit 1	Force led circuit 1 to operate (bypass defaults)
4		X	Over ride circuit 2	Force led circuit 2 to operate (bypass defaults)
5-12	-	-	Factory setting of the light	Not to be changed

The switches 3 and 4 are to be used by trained operators: forcing the led circuits when alarm is activated can result in temporary or permanent destruction of the light.

The switches 5-12 are the setting of the program inside the command card on a binary code, 5 being the least significant bit and 12 the most significant bit **and should not modified**

6.3 [IoT interface P/N114802](#)

See notice of the IoT gateway

6.4 [Photocell P/N100757](#)

See notice of the photocell in annex

6.5 [Switch on the command cards](#)

After power on the light, following steps are performed on each command card:

- Initialization:
 - o Activation of the alarm relay
 - o Activation of all the internal function of the light
- Start of operation:
 - o Checking the status of the system
 - o Flash
 - o Synchronization

3 leds are present to indicate the status of the system. If a default is found, those leds are activated and allows to identify a permanent default to the operator (Cf. see trouble some paragraph). The alarm relay is also activated to indicate remotely the status of the light.

7 INSTALLATION

7.1 Unpacking

Carefully unpack the light and remove any internal packing material. Examine each item for obvious physical damage. Immediately report any claims to the carrier. Installation drawings is included in the power supply carton.

7.2 Mounting and preparation

7.2.1 Installation of the light



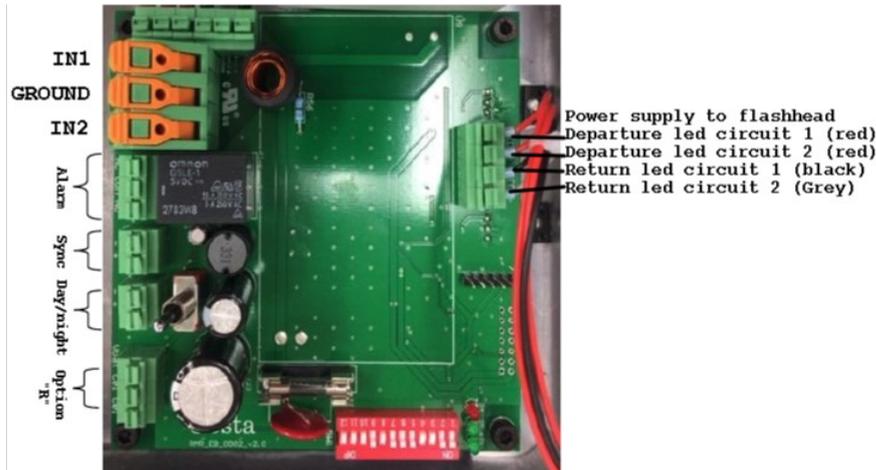
The light assembly fixture must be mounted perfectly on horizontal to meet the optical specification required for Aircraft Obstruction lights. If mounted in other position, the fixture will not be considered as an Aircraft Obstruction lights

We recommend that the metallic base of the light to be connected through a grounding kit to the local grounding of the tower

7.2.2 Cable gland on the flash-head

Between each flash-head and the controller, a 5G cable shall be used. External diameter of cable is Ø 7mm to 13mm for power supply cable

7.2.3 [Electrical wiring of the command card](#)



Power supply:

IN1 = +48Vdc
Ground
IN2 = Ground (-48Vdc)

Alarm:

Relay free contact : NO = Normally Open,
NC = Normally Close,
COM = Common.

When light is not powered or with default, NO/COM is closed and COM/NC is open (NO/COM open and COM/NC close if light normally working)

Sync :

Master mode: send a +48Vdc pulse (on the terminal connection « + ») that can be used for other lights in slave mode to flash at the same time.

Slave mode: Connect the « + » and « - » of the master unit to the the « + » and « - » of the same terminals of all slave units so that flashes being synchronized

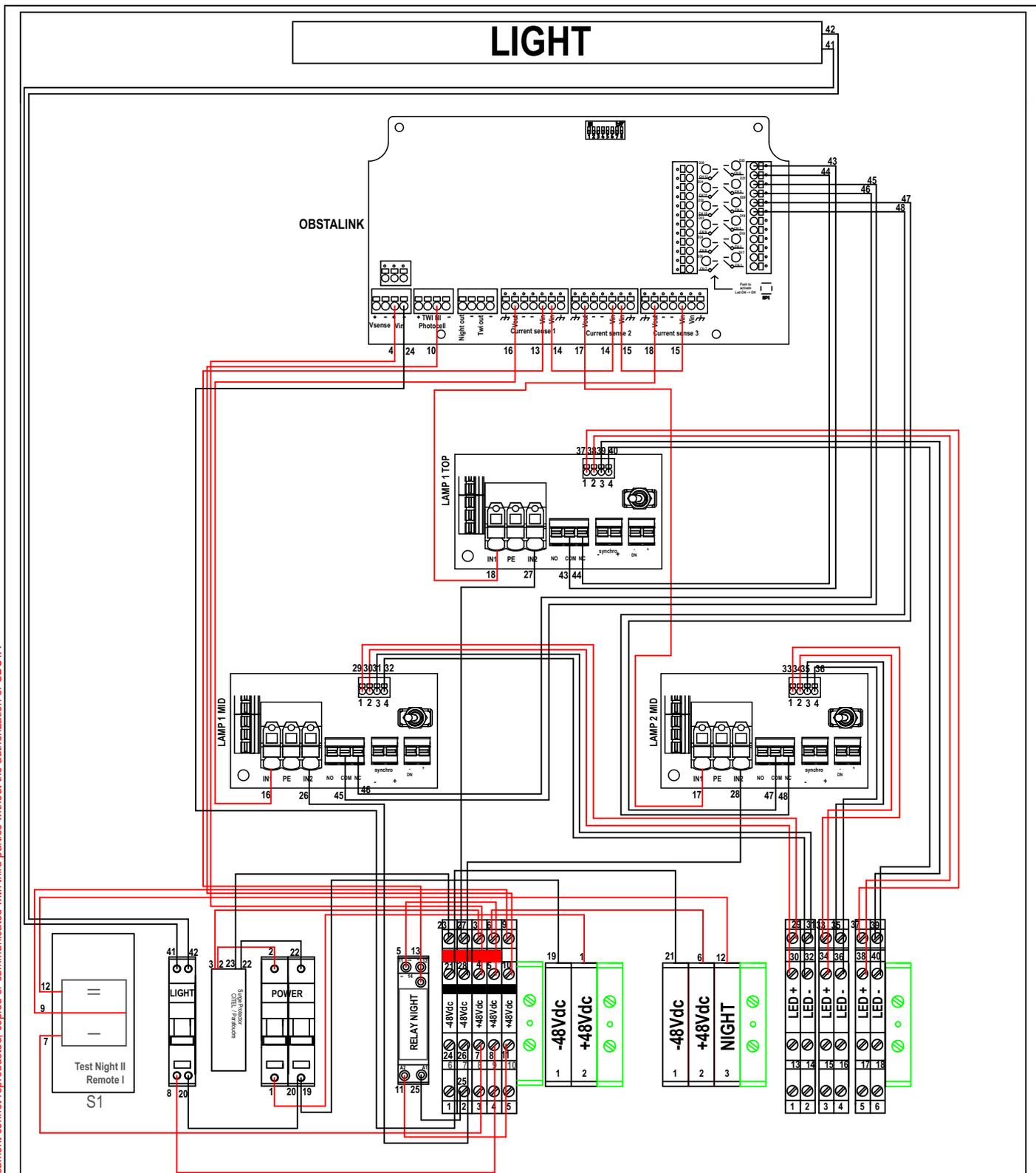
Note : In this case, check carefully the wiring diagram after installation. If no pulse is received from the master unit, the slave unit(s) will flash at 15 flash per minute

Day/night :

Master mode: send a +48Vdc signal (on the terminal connection « + ») that can eventually be used for other light in slave mode to be switch on/off at the same time

Slave mode: Connect the « + » and « - » of the master unit to the the « + » and « - » of the same terminals of all slave units so that day/night switch being synchronized

7.3 Internal wiring of the controller 113176-048- 3 with IoT



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OBSTA <small>Reims Factory</small>		Plan câblage interne 113176-048-3					
3, Impasse de la Blanchisserie BP 56 51052 REIMS CEDEX (France) Tel. 03.26.85.74.00		CODE:	PLAN: O-CBL-0153-0FC DRAWING:	A			
		ECHELLE: SCALE:	MATIERE: MATERIAL:	ANNULE ET REMPLACÉ CANCELED AND REPLACED			
REPERE DESSIN REFERENCE DRAWING:	DESSINE PAR: DESIGNED BY:	DATE:	VERIFIE PAR: CHECKED BY:	DATE:	APPROUVE PAR: APPROVED BY:	DATE:	VISA:
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7.4 Tools

7.4.1 Installation of the flash-heads

- Wrench of 22 Cable glands
- Flat screwdriver 0.5x30 Cable terminal for synchronization

7.4.2 Maintenance

Those tools come in addition to above :

- Allen wrench 2.5 screw for latches (to change latch)
- Allen wrench 3 screw for PCB (to change the command card)
- Allen wrench 4 screw for shunt braid (to change the flash-head)

7.5 Checking of the installation

- Tightening of the cable glands :
It is the responsibility of the person involved during the installation to correctly tighten the cable glands according to the cable used: too much tightening can cause a leakage, too little tightening can cause water inside
- Wiring of the wires :
 - o Use wire end
 - o check the power cable on the terminal connection
 - o check the ground is connected on the terminal connection
 - o check the synchronization cable (if used)
 - o *in option, add black heat shrinking tube (or 3M scotch) on the cable glands*
- Closing the flash-head :
 - o check the position of O-ring in the light body before closing the flash-head
 - o check the 2 latches are correctly close
- Attachment of the light :
 - o Use the 4 brackets to fix the light
 - o Use locking washers (or other device) in presence of vibration
 - o Use a spirit level to check the light is perfectly horizontal
 - o Option « R »
 - Orientation of the light censor should be in the North

It is very important to check the wiring and the above points to ensure a good operation of the light and waterproof

8 MAINTENANCE

Test	Frequency	Preventive action	Risk
Cable	Annual	It is recommended to check once a year the torque for each screw terminal to avoid loose wire and the cable glands to avoid loose of waterproof.	short-circuit insulating failure destruction
Waterproof	Annual	Visual : -No water inside - O ring position and appearance	short-circuit insulating failure destruction
Corrosion	Annual	Visual	Water inside
flash-head	Annual	Clean the glass of flash-head	Bad light output

9 TROUBLESHOOT - MALFUNCTION

9.1 Led indicators on the command cards

Some indicators (Leds) located on the top on the right of the command card in the event of alarm give a status of the light, they are identified in white :

D4 : red in case of alarm

D5 : green for led circuit 1 inside the flash-head

D6 : green for led circuit 2 inside the flash-head

D5 and D6 blinks at the same pulse than the circuit 1 and circuit 2 inside the flash-head. D4 normally blinks also at the same pulse

On the surge protection, a luminous indicator indicates the status of it ; in case this indicator is off (while input power is present), the surge protection is to be replaced

9.2 Quick trouble shooting synoptic

Default		Action
Normal operation	Green LED D5 blinks with led circuit 1 Green LED D6 blinks with led circuit 2	Ok
Power supply	Red LED D4 blinks quickly	Check the input power supply feeding the light
Synchronization	Red LED D4, sequence 1 long flash + 1 short flash flash-head at 15 flash per minute	Check the connection of synchronization wires on the command cards (both master and slave units)
GPS	Red LED D4, sequence 1 long flash + 2 short flash flash-head at 15 flash per minute	Check the status GPS (Led blinking 1 per second) and the position of its antenna
Led circuit 1 and 2	Red LED D4 + green LED of the circuit	Replace flash-head

10 SPARE PARTS

Command card for OFC-RI-048	113790RR-CMD-048
flash-head for OFC-RI-REM	113790RI-REM
Photocell.....	100757
IoT.....	114802

ANNEXE

Photocell short notice



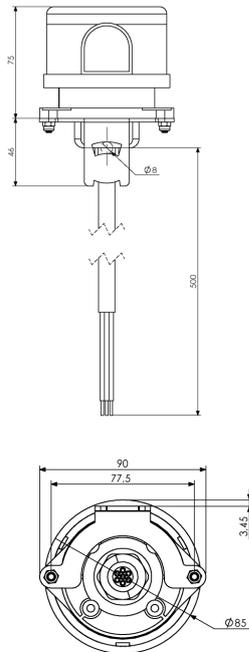
INSTALLATION INSTRUCTIONS - NOTICE
D'INSTALLATION - NOTICIA DE
INSTALACION - INSTALLA-
TIONSHINWEISE - ISTRUZIONI PER
L'INSTALLAZIONE - INSTRUÇÕES DE
INSTALACAO - MONTÁŽNÍ NÁVOD -
РУКОВОДСТВО ПО МОНТАЖУ -
安装指导书

O-PRT-00013-PHO_A

					Ambient light intensity censor (intensité lumineuse ambiante)		
					> 500lux	Between 500lux and 50lux Entre 500lux et 50lux	< 50lux
P/N	4 wires	color	max admissible Current	Day (jour) 	Twilight (crépuscule)* 	Night (nuit) 	
Photocell DC	100757	output signals (signal de sortie)	Red wire (night signal)	2A	0V	0V	+12 to 60VDC
			Purple (twilight signal)	0,3A	0V	+12 to 60VDC	+12 to 60VDC
		input power supply (alimentation)	Black wire		+12-60VDC		
		White wire		0V			
Photocell AC	100756	output signals (signal de sortie)	Red wire (night signal)	2A	110 to 240VAC (phase)	0V	0V
			Purple (twilight signal)	0,3A	110 to 240VAC (phase)	110 to 240VAC (phase)	0V
		input power supply (alimentation)	Black wire		110 to 240VAC (phase)		
		White wire		110 to 240VAC (neutral)			

*: the twilight signal (purple wire) is normally only used for high intensity system

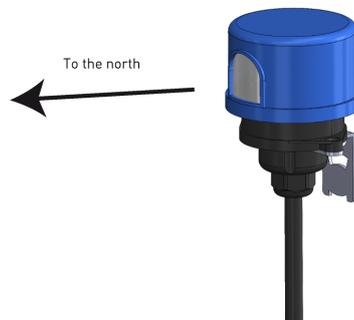
*: le signal crépuscule (fil violet) est normalement uniquement utilisé avec les systèmes haute intensité



1. assembly

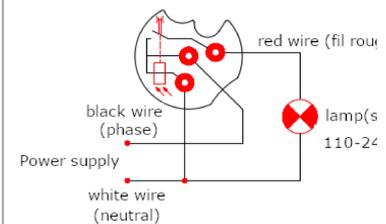
The ambient light sensor of the photocell should be mounted upright, away from artificial light (eg., floodlights), and in a location that will enable its sensor window to have an unobstructed view of the polar sky (eg., pointed north in the northern hemisphere).

La cellule photoélectrique doit être fixée verticalement, sa fenêtre éloignée de toute lumière artificielle, et orientée vers le Nord (dans l'hémisphère Nord)



2. wiring of the photocell

Wiring of PHOTOCELL AC Raccordement Photocell AC



Wiring of PHOTOCELL DC Raccordement Photocell DC

