



OBSTAFLASH Led integrated

48VDC & 100-240VAC / L-865/L-864

INSTALLATION AND OPERATION GUIDE



GENERAL
INFORMATION

5

INSTALLATION

11

PRINCIPLES
OF OPERATION

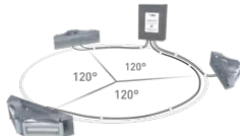
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MAINTENANCE
TROUBLESHOOT

23

APRIL 22

List of models

Description	P/N		Input voltage
Dual color or white only medium intensity obstafash OFI360-RW-240I	113792-240-G		110-240Vac
Dual color or white only medium intensity obstafash OFI360-RW-048	113792A		45-55Vdc
Dual color or white only medium intensity obstafash120 kit OFI120-RW-048-U	113712A		
Dual color or white only medium intensity obstafash120 kit OFI120-RW-240-U	113715A		
Dual color or white only medium intensity OFI360-RW-240	113725IA		110-260Vac
Dual color or white only medium intensity obstafash120 kit OFI120-RW-48/240	113758A		

Accessories to be ordered separately:

- 48Vdc photocell P/N100757 for day/night change
- intermediate L-810(F) NAVILITE FAA P/N 113969IR to be used with L-865/L-864 or L-864 only

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1 BE CAREFUL

1.1 Warning

- 1 Read all document pages before powering up the beacon
- 2 Light emitted by this beacon can result in temporary or permanent eye damage

DO NOT LOOK DIRECTLY AT THE PROJECTOR WHILE IT IS IN OPERATION

- 3 Any intervention must be carried out by accredited and trained personnel

1.2 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.

1.3 Notice

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2 GENERAL INFORMATION

2.1 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 Medium intensity type A/B or C.

2.2 General Description

The OBSTAFLASH Lighting System is an LED medium intensity system manufactured to comply with ICAO annex 14 chapter 6 and also Federal Aviation Administration Advisory Circular 150/5345-43. Each system consists of one flash-head, and can be associated with power supply with ambient light sensor (photocell) and the interconnecting cable. System components are shown in Figures 1-1 to 1-4

2.3 Obstaflash

The OBSTAFLASH flash-head consists of:

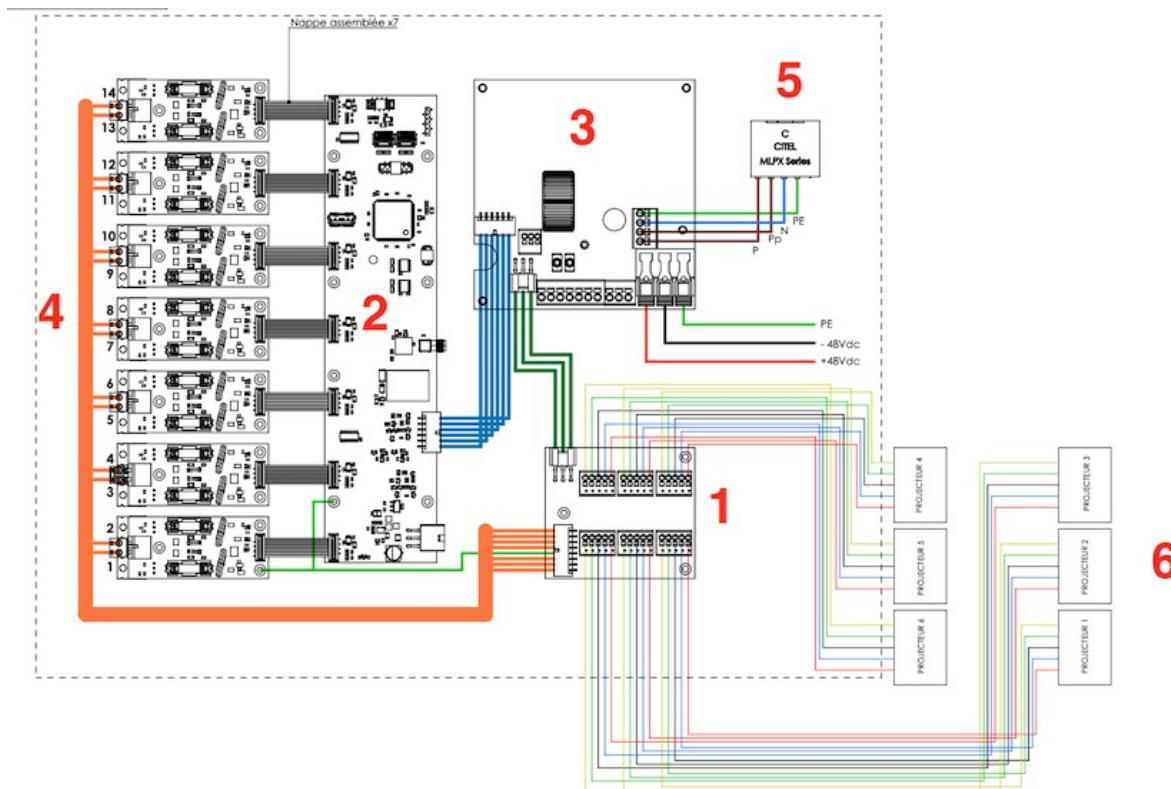
- a single flash-head with 6 led projectors or a set of 3 flash-heads with 2 projectors each placed at 120° around the obstacle. Each projector is made in glass and aluminum and includes 3 led circuits:
 - 2 circuits of 12 white leds (white mode for L-865/L-864 & L-865)
 - one circuit of 6 red and infrared led (red mode for L-865/L-864 & L-864). Each red & infrared circuit is in serial with the circuit of 2 other projectors
 - Each projector is provided with a molded cable connected to a 48vdc stainless power supply inside the flash-head (or close to the 3 flash-heads with 2 projectors) as below
- the stainless power supply that contains:
 - 6 power cards for the 12 white led circuits
 - 1 power card for the 2 red and infrared led circuits
 - a command card with luminous indicators, dip-switches used for the setting of the system (medium intensity type A and B, type A only or type A and C, communication and synchronization setting) and USB port for factory setting
 - a terminal connection for the 6 cables of projector. Each cable do have 6 colored wires (2 wires per led circuit)
 - a surge protection
 - a terminal connection for the dc input power, day/night information, alarm, photocell and optional external top sync (24V-to-48V pulse) if synchronization with other lights is required
 - depending on the version, a 230VAC or 48Vdc power supply

1.2.2 Obstaflash with external 110-240Vac power supply (P/N113725AI, 113723AI, 113957AI and 113958AI)

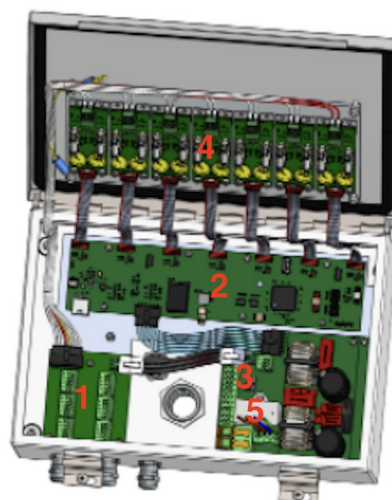
The OBSTAFLASH 110-230VAC consists of a 48VDC obstafash (as above) and a 110-230VAC additional stainless power supply P/N113797U remotely located (at the bottom of the tower) that contains:

- power supply, AC surge protection
- terminal blocks for wiring to the flash-head, external photocell, remote alarms, etc...
- A S2 button with 3 positions
- "Remote" position, the lights are in normal operation controlled by the photocell
- "Day" position, the light is forced in day mode
- "Night" position, the light is forced in night mode.

2.4 obstaflash cabinet overview



1	Interconnection card for projector
2	Command card
3	Supply card for 48Vdc or 230Vac power supply and signal wires
4	Power card #1 to #7 (left to right)
5	Surge protection
6	Projectors PJ1 to PJ6 (outside the cabinet)



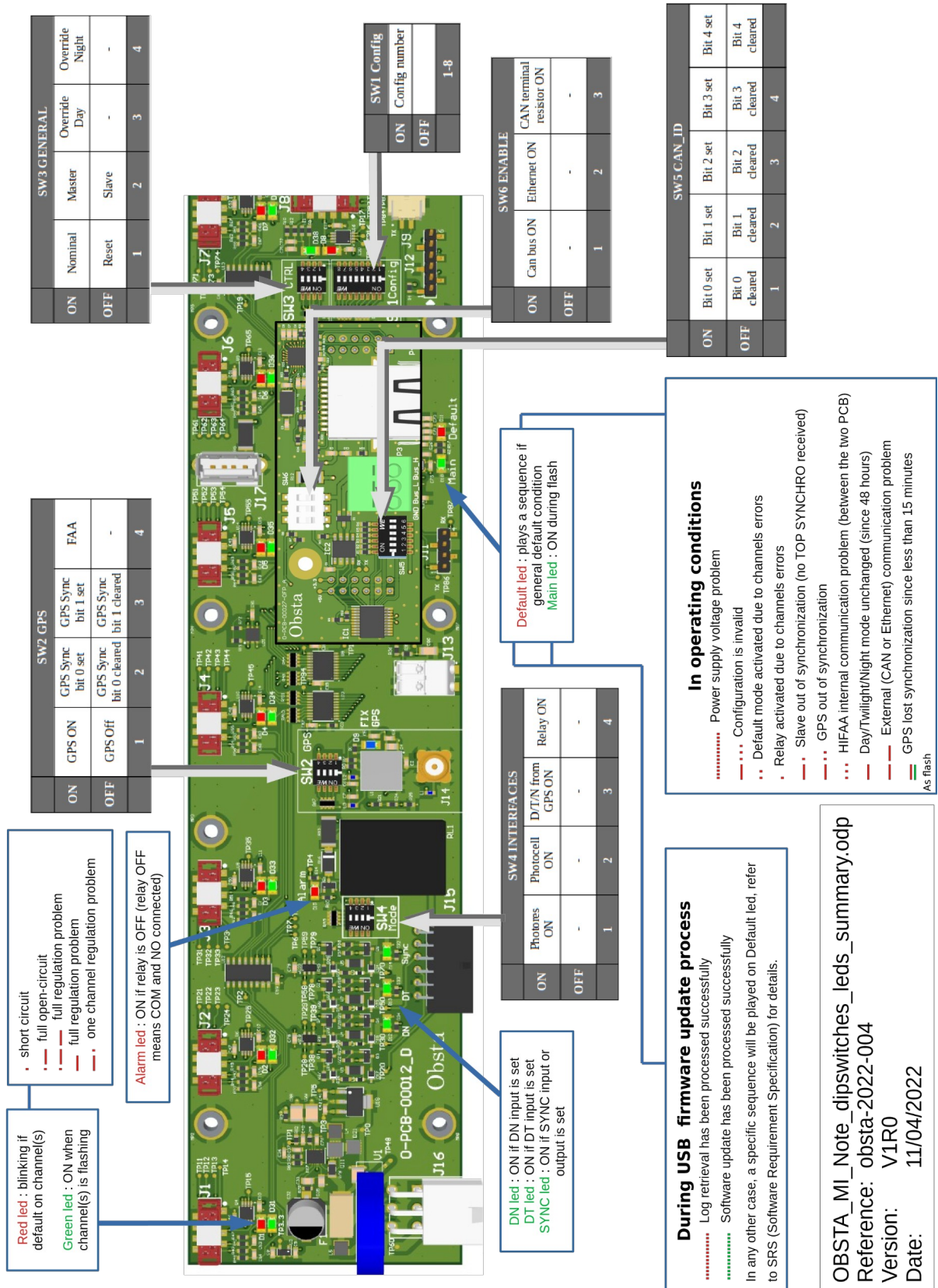


Figure 3 : tool sheet command card

Power Card led : 7 pairs of 2 led indicators are present to inform about operation status of each power card:

Green blinking sync as per the flash request → normal operation,

Red → the power card or its associated projector is in default

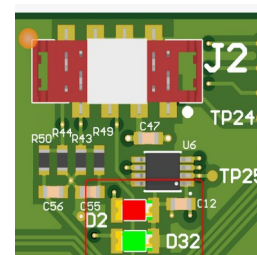


Figure 4 : Power Card Led

Operation Led : 2 leds are present to inform about operation status. See default section for more information.

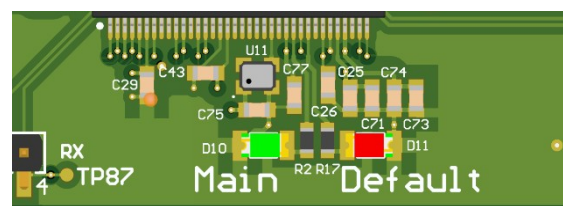


Figure 5 : Command Card Operation Led

Mode Led: 3 leds are present to inform about synchronization and Mode information.

- “Top sync” for synchronization: blink at each lamp flash in “master” configuration or at each flash request received from controller
- “DT” for Twilight status¹ (specific to high intensity)
- “DN” for Night status¹

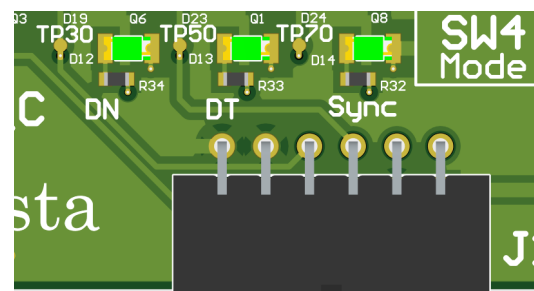


Figure 6 : Command Card Mode Led

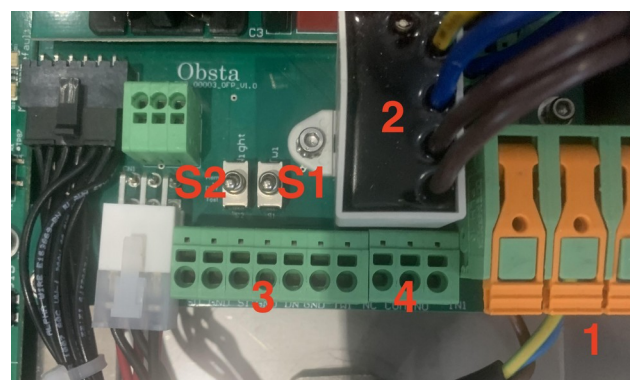
Switches are present to allow multiple kind of operation:

- SW1: Config select the topology and the associated configuration (FPM, Flash frequency, etc ...)²
- SW2: GPS: set synchronization with GPS
- SW3: Control (Lamp ON / OFF, Master slave ...)
- SW4: Mode : Set which sensor is used for Mode change (Day, Twilight, Night)

For more information about switches see the dedicated section.

2.5.3 Supply card

- 1:** Power input to be connected from left to right:
+48Vdc, -48Vdc, Earth (or Line, Neutral, Earth for AC)
- 2:** SPD Device connector
- 3:** Communication signals for flash and mode (Day, Night) from photocell signal and top sync
- 4:** alarm COM, NO, NC
- S1:** Not used
- S2:** Test switch for day/Night: Manual force the signal to Day/Night (Must be always in remote position for normal operation)



¹ Depending on the switch configuration and operation mode led status could differ.

² Depending on the final application, not all configurations are compliant with ICAO, contact Obsta for more information.

2.5.4 Power card

The power supply unit includes 7 power cards. The 7 power cards regulates the current of the 14 led circuits. 6 power cards drive the 2 white led circuits inside each projector; 1 power card drive the 2 red and infrared led circuit inside the 6 projectors. Each card is affected to the associated projector number on the inter-connexion board. The power cards #1 to #6 are associated to white led circuits inside projectors from left to right (PJ1 → Power Card #1 ... PJ6 → Power Card #6). The power card #7 is associated to the 2 red and infrared circuits in serial in the 3 projectors #5 #3 #1 and in the 3 projectors #6 #4 #2

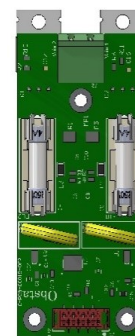


Figure 7 : Power Card

2.6 Internal Cabling: Harness

All Cards are connected by cable harness. There are 4 harnesses in total:

- 1x AC Power Harness: From Interconnection to Power Supply Card
- 1x DC Power Harness: From Interconnection to Power Supply Card
- 1x Signal Harness: From Interconnection to Command Card
- 1x Projector Harness: From Interconnection to Power Card (1 to 7)

All harnesses are installed in Obsta Factory. If any operation is needed, please contact Obsta before any intervention. Harness must be manipulated with care, do not pull the harness by the wire. Avoid using tools (Screwdriver) for removing connector from the card, this could damage the harness or the Card.

3 OPERATION

3.1 Overview

The OBSTAFLASH dual color medium intensity serie is a full system design to operate according 2 modes: Day, Night. Each mode has its own flash duration, frequency, luminous power and color.

3.2 Switches configuration

3.2.1 SW1: Configuration

Configuration is set in the factory as the topology of the systems and the type (medium intensity type A and B, type A and C, or type A only). *Changing the switches without obsta approval may cause irreversible damage either to the lamp or the Power supply.*

3.2.2 SW2: GPS

Configuration of the GPS for flash synchronization (the SW3 must be set to master). Without need to be synchronized wireless with other lights, the normal position is **bold**

#	ON	OFF	Comment		
1	In used	Not used	In used the GPS clock is used to synchronize the flashes.		
2	Sync0		Sync0	Sync1	Comment (dip-switch 2 and 3)
		OFF	OFF	Flash sequence start at the second “0” of each minute	
3	Sync1		OFF	ON	Flash sequence delayed by 1/13 th of period from second 0 second
			ON	OFF	Flash sequence delayed by 3/13 th of period from second 0 second
			ON	ON	Flash sequence start at the second “1” of each minute
4	In case of absence of GPS signal			Commentaire (dip-switch 4)	
			ORN	This bits must always be OFF ORD: Override the mode and force it into Day mode	
			ORT	ORN: Override the mode and force it into Night mode <u>ORN + ORD: Override the mode and force it into Twilight mode</u>	

Important remark: If the system is using external signals for synchronization, in case of defect of signals, the GPS will automatically be used for the flash and day/twilight/night mode:

- flash synchronization is done as per dip-switches 3 and 4 on SW2
- day/twilight/night mode is done as per astronomical twilight (sun -6° below the horizon)

3.2.3 SW3: Control

The light should be in master configuration when used standalone, the light should be in slave mode when used with additional light set up as master, or an external controller

#	ON	OFF	Comment		
1	Operation	Reset	When this bit is set the light will work according to the configuration and set switches. When this bit is not set all default are erased The beacon will perform a soft restart after the bit is unset.		
2	Master	Slave	Master: Synchronization signal for flashes is emitted by the beacon (configuration by default) Slave: Synchronization signal for flashes is requested. Without this signal the lamp will return a default.		
3	ORN	-	These bits must always be OFF		
			ORD: Override the mode and force it into Day mode		
4	ORT	-	ORN: Override the mode and force it into Night mode		
			ORN + ORD: Override the mode and force it into Twilight mode		

3.2.4 SW4: Mode

This switch will select the sensor used for switching mode

External signal is selected when an external signal is used from a photocell or from a controller at the bottom

#	ON	OFF	Comment
1	Photores	-	Built-in photo-resistor is selected to detect Day / Twilight / Night ³
2	External	-	External signal is required for switching mode (Connected to the Interconnection Card)
3	GPS	-	GPS will calculate the switching time according to localization
4	Relay Used	Relay not Used	Bit used for activating alarm through relay

3.3 Default

3.3.1 Operation Led

#	Default	Defaults conditions	red signal led	Seq. impact
D0	Power supply voltage	Detected if there is a power supply issue (Over-voltage or Under-voltage)	 short, continuously blinking	Lamp OFF
D1	Invalid configuration	Means inconsistency in dip-switches, for any of the following reasons: - GPS is disabled and Sync1 + Sunc0 are set - Several sensors for switching mode are set - The selected configuration number does not exist	---- long 3*short	OFF
D2	Power Card default error	Default from either Power Card or Projector causing insufficient light	-- 2*short	-
D3	Light channels relay error	Default from either Power Card or Projector causing insufficient light	. short	-
D4	GPS out of synchronization	GPS is in used and no signal accurate is received	--- long 2*short	15 FPM
D5	Slave out of synchronization	Card in slave mode & no synchronization signal during 10s	-- long short	15 FPM
D6	DTN mode unchanged	The mode did not change since the last 48 hours.	- Long	-
D7	External communication problem	Communication through ethernet or CAN data link has failures.	-- 2*long	-
D8	-	If GPS is out of synchronization but has been synchronized since last 15 minutes: Working on internal clock	- As flash	-

³ Optional equipment

3.3.2 Power Card Led

Power card error	Error conditions	Persisted	Power card default led sequence
Short circuit	<i>Some or all led are not working</i>	-	· short
Open circuit 1	<i>Both led circuit piloted by the power card are in open circuit</i>	-	·· short, long
Current Regulation Issue 1	<i>Power card cannot set the according current on both circuit led</i>	X	··· short, 2*long
Open-circuit 2	<i>One of the two led circuit piloted by the power card is in open circuit</i>	-	- As flash
Current Regulation Issue 2	<i>Power card cannot set the according current on one circuit led</i>	X	- As flash, followed by short

3.3.3 Relay

Relay will be set when some conditions are met, depending on the configuration and switches. (Only activate if switch 3.4 is set). Errors are described in 3.3.1.

3.4 Absolute maximum rating

3.4.1 Light output

Name	Parameter	Min	Typical	Max	Unity
Light Output					
Fl_{rate}	Flash Rate*		40(white mode) 30(red mode)		FPM
B_{pat_h} B_{pat_v} R	Beam Pattern: Horizontally Vertically Ratio Intensity 0° / -10°	3	360 5	6 3	degree degree %
Lum_{Day}	Day Luminosity ±25%		20 000		Cd
Lum_{Twi}	Twilight Luminosity ±25%		20 000		Cd
Lum_{night}	Night Luminosity ±25%		2 000		Cd
FD_{Day}	Flash Duration Day*		100		ms
FD_{Twi}	Flash Duration Twilight*		100		ms
FD_{Night}	Flash Duration Night		200		ms

3.4.2 Electrical input for 48Vdc systems

Name	Parameter	Min	Typical	Max	Unity
Electrical					
$V_{\square}$	DC Power Input Voltage (depending on part number)	45	50	55	Vdc
I_{max}	Max current (white day mode)*			13,8	A
P_{avg}	Average Power consumption (40FPM 100ms day mode)			50	W
V_{logic}	Voltage for signal (Synchro, Night, Twilight)	30	48	55	Vdc

*: FAA configuration only, for ICAO configuration during day mode the flash duration is 200ms and the max current is 7A

3.4.3 Electrical input for 120 or 240Vac systems

Name	Parameter	Min	Typical	Max	Unity
Electrical					
$V_{\square}$	AC Power Input Voltage	110	120 or 240	264	Vac
F	AC Frequency	47	50 or 60	63	Hz
$V_{\square}$	DC Output Voltage for the flash-head		50		Vdc
P_{avg}	Average Power consumption (40FPM 100ms day mode)			50	W
V_{logic}	Voltage for signal (Synchro, Night, Twilight)	30	50	55	Vdc

3.4.4 Mechanical properties and operating environments

Name	Parameter	Min	Typical	Max	Unity
Mechanical Properties					
M_{PSU}	Mass of the Power supply		~ 15.5		Kg
M_{FH}	Mass of the Flash head		~ 19		Kg
F_{wind}	Max wind force under 324km/h (Flash-head)		850		N
Dim_{cab} Dim_{fh}	Max Dimension w x h x d Cabinet Flashead		480 x 480 x 220 500(diameter) x 333		mm mm
Operating Environment					
$W_{T^{\circ}C}$	Working Temperature	-40	20	55	°C
HR	Relative Humidity	5		95	%

4 INSTALLATION

4.1 Unpacking

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

4.2 Mounting and preparation

Any manual intervention must be performed on a NON-POWERED product. Human an material issues could occurred inducing injury or permanent damage to the product.

4.2.1 OFI360 & Cabinet mounting

Depending of the application multiple flash unit may be required. Obsta recommend that each unit has its own support (One support the kit : Flash-head + Cabinet). Cabinet or Flash-head must be installed in fixed position. Obsta also recommend that the cabinet shall be in an easy access position/orientation for maintenance purpose. Each part of the kit must be correctly fixed to the structures.

- Leveling of the flash-head

1. Verify that the mounting surface is free of debris.
2. Align the five mounting holes in the base of the flash-head with the holes in the structure mounting plate.
3. Secure losing the flash-head on its support. Do not tight up screws yet.
4. Insure that the flash-head is installed horizontal by using the level provided (air bubble shall be centered).
5. If the flash-head is not leveled, add stainless steel shim material or washers (stainless steel or galvanized) as necessary to level the flash-head.
6. Once leveled, firmly secure the hardware once the flash-head, using the same torque on each screw. Verify that the flash-head is level when the hardware is fully tightened. If not leveled, then loosen the mounting hardware and repeat Step 5 until beacon is firmly secured horizontally.

- Cabinet shall be placed in upright position (Cable glands face to the ground)

- Cable shall be installed with cable clamp to avoid any oscillation movement due to wind pressure.

In some specific case with high electromagnetic field an additional shield is required to ensure proper operating. Obsta may provide or suggest additional equipment to improve stability and durability of the kit. Please contact Obsta if the product may be exposed to this kind of perturbation.

4.2.2 Flash Head Cabling

- Open the cover and the stainless power supply of the flash-head,



- Insert the cable through the cable entry below the flash-head; Once the cable is firmly attached, connect the 48VDC wires and the control wires to the terminal inside the 48Vdc cabinet at the top and the AC power cabinet at the bottom and the grounding and/or shield on the yellow terminal of TB1 as per the wiring diagram page.

If the flash-head 48VDC is powered with an OBSTA power cabinet, using ICAO configuration, the cross section of the power cable must be set :

	For dual color or white only obstafash systems P/N 113725AI, 113723AI, 113758A, 113757A			
Cable length	1-45m	45-105m	106-160m	
Cable diameter	1,5mm ²	2,5mm ²	4mm ²	

4.2.3 Ambient Light Sensor

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 power cabinet) or on the AC power cabinet (if there is an AC power cabinet).

The ambient light sensor is powered through 48VDC emit 2 logical signals in 48Vdc for Twilight and Night (By default day is the absence from both signal). Low level signal must be either 0V or not connected. Cable end shall be used for connecting the sensor into P3 (interconnection connector). Cabling must respect the silkscreen. (Sensor can be power through P3 connector).

Ambient light sensor can be composed of one sensor being able to sense all intensity level are separate sensors.

It can be connected on the power supply of the light (stand alone light in master configuration) or on the controller located at the bottom of the obstacle

4.2.4 Wireless Synchronization by GPS – Optional

If included a wireless GPS antenna can provide flash and mode synchronization. Switches must be set according to the desired application.

A blue led status start blinking when the GPS found signal that could be used.

4.3 Power Cabling

This operation must be performed by trained and authorized people only.

Depending on your application the cabling may vary. Power input shall be cabled with P1 connector and signal with P3 connector. Silkscreen must be respected to insure proper operation.

5 MAINTENANCE

5.1 Annual visit

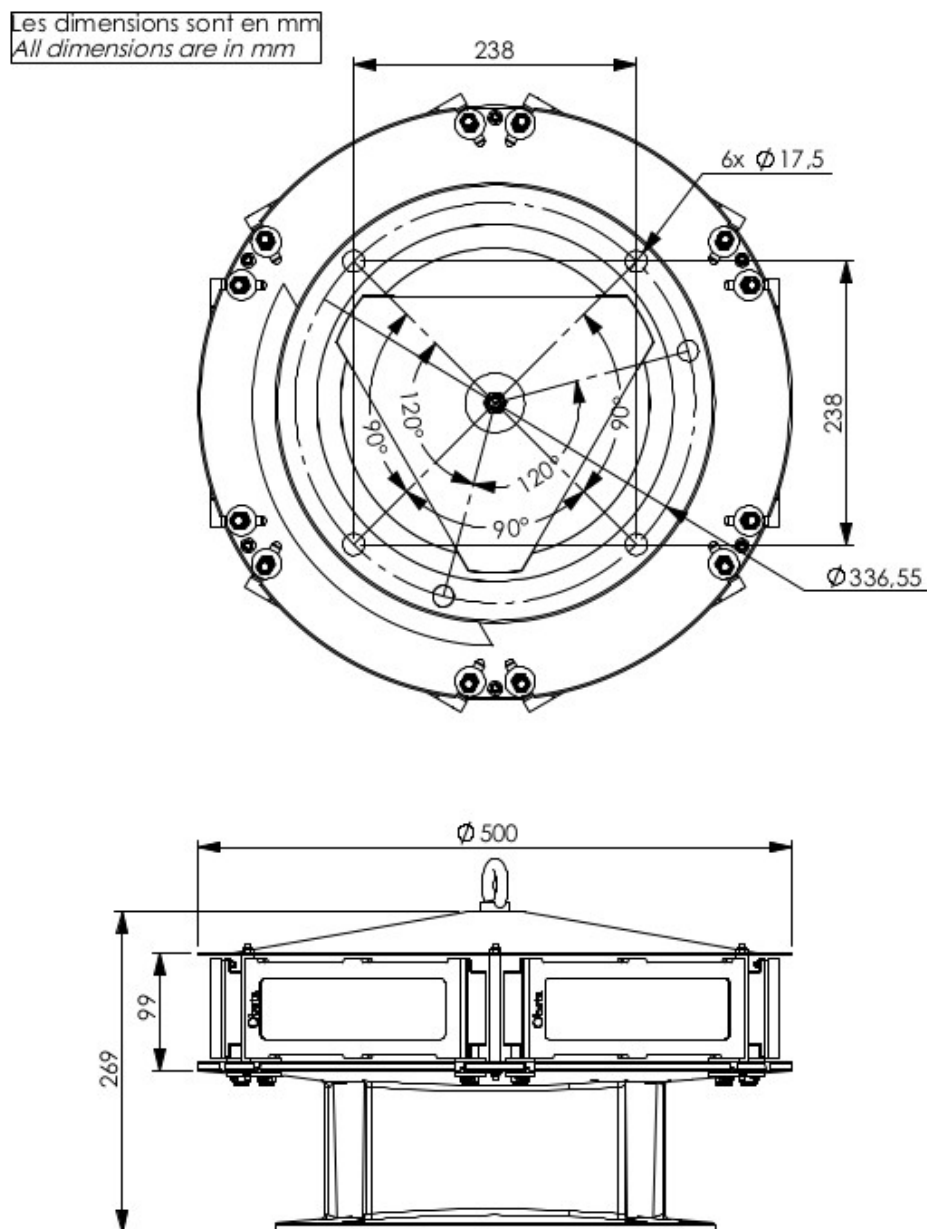
Test	Frequency	Action	Sanction	Solution
Cable	Annual	- Tighten Power card connector's screw - Tighten Projector's connector plugged on the PSU		
Waterproof	Annual	Visual	No water inside	Search the water leak
Corrosion	Annual	Visual	No excessive corrosion	Replace defective part
Power supply	Annual	Visual	Led status indicator	Replace the defect part if necessary
Led projector	Annual	Clean with Humid cloth the glass of each projector		

5.2 Spare Parts

	Part number
Projector RW with 0,75 meter of cable (single flash-head 360°)	113761IR
Projector RW with 10 meters of cable (kit with 3 flash-heads 120°)	113761IR-10
Command Card	113744B
Power Card	113741B
Supply Card	113748B
Interconnection Card	113743D
Surge protection	DS-48
Harness wire kit	
with external power cabinet P/N113797U	
Security switch and test button	113743
Surge protection DS215-120/G 120VAC	311721
Surge protection DS215-230/G 240VAC	451721
Power Supply (AC/DC Converter)	113742
Accessories	
Photocell	100757
NAVILITE L-810(F)	113969IR

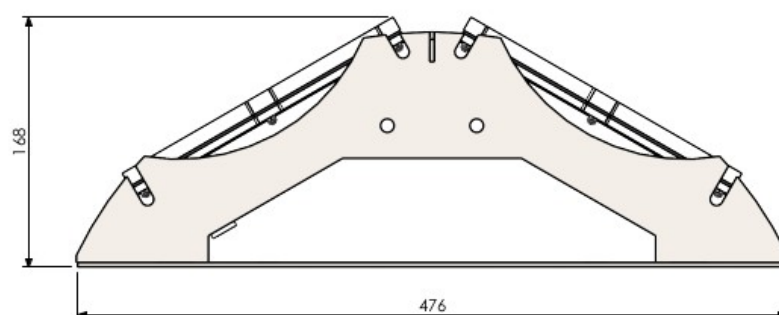
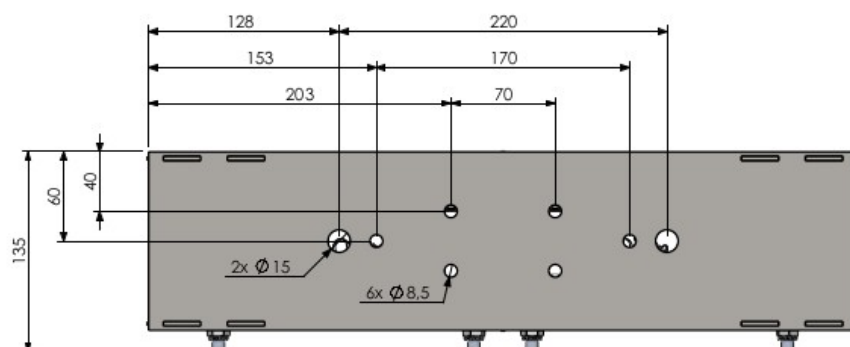
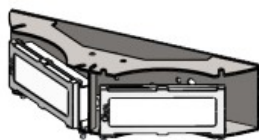
6 DRAWINGS

6.1 Flash-head (lamp) dimensions P/N113792A and 113725IA



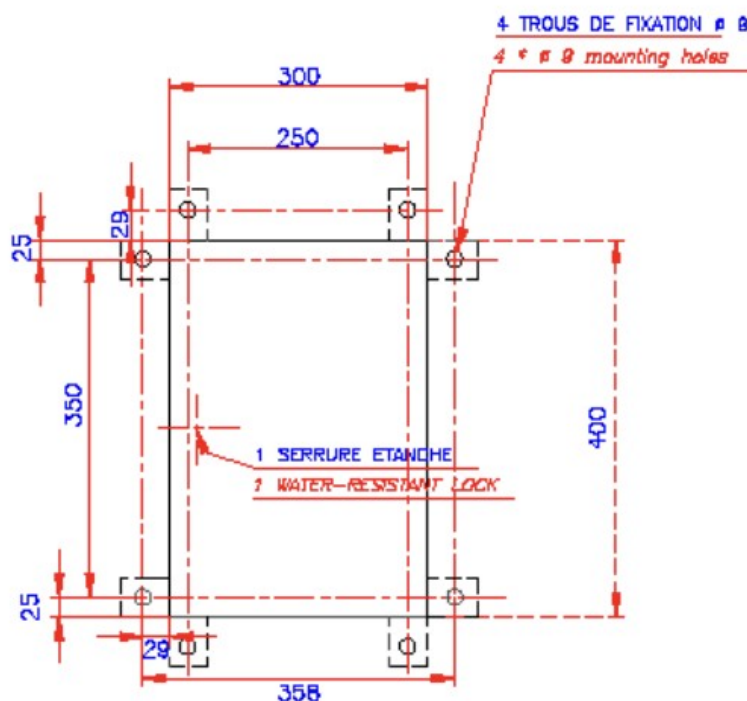
6.2 Flash-head dimensions P/N113712A, 113715A and 113758A

Les dimensions sont en mm
All dimensions are in mm

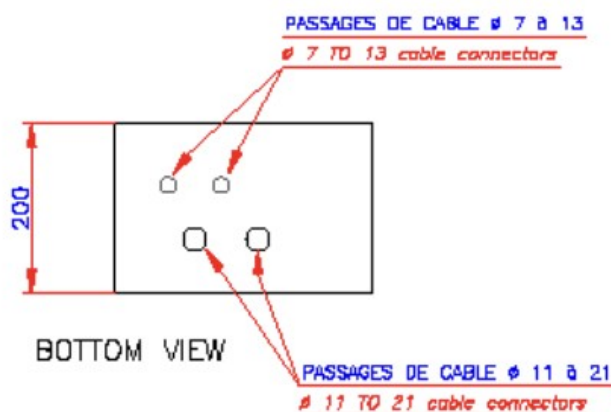


6.3 External stainless AC power cabinet dimensions P/N113797 (for obstaflash P/N113725IA and obstaflash120 P/N113758A)

All dimensions are in mm



FRONT VIEW



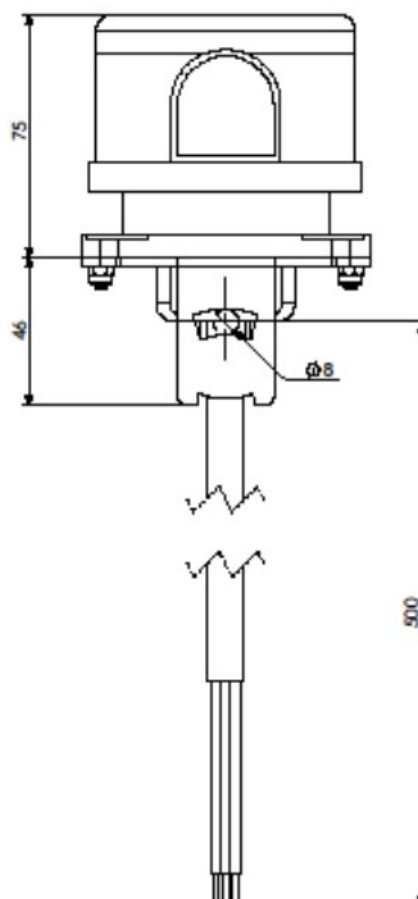
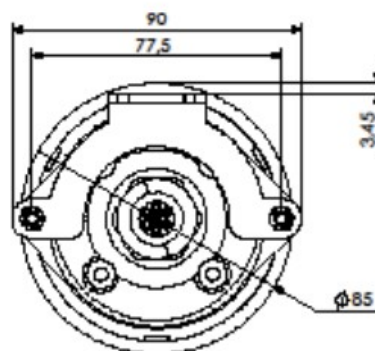
BOTTOM VIEW

Matériel : Inox 316L ep. min. 2mm

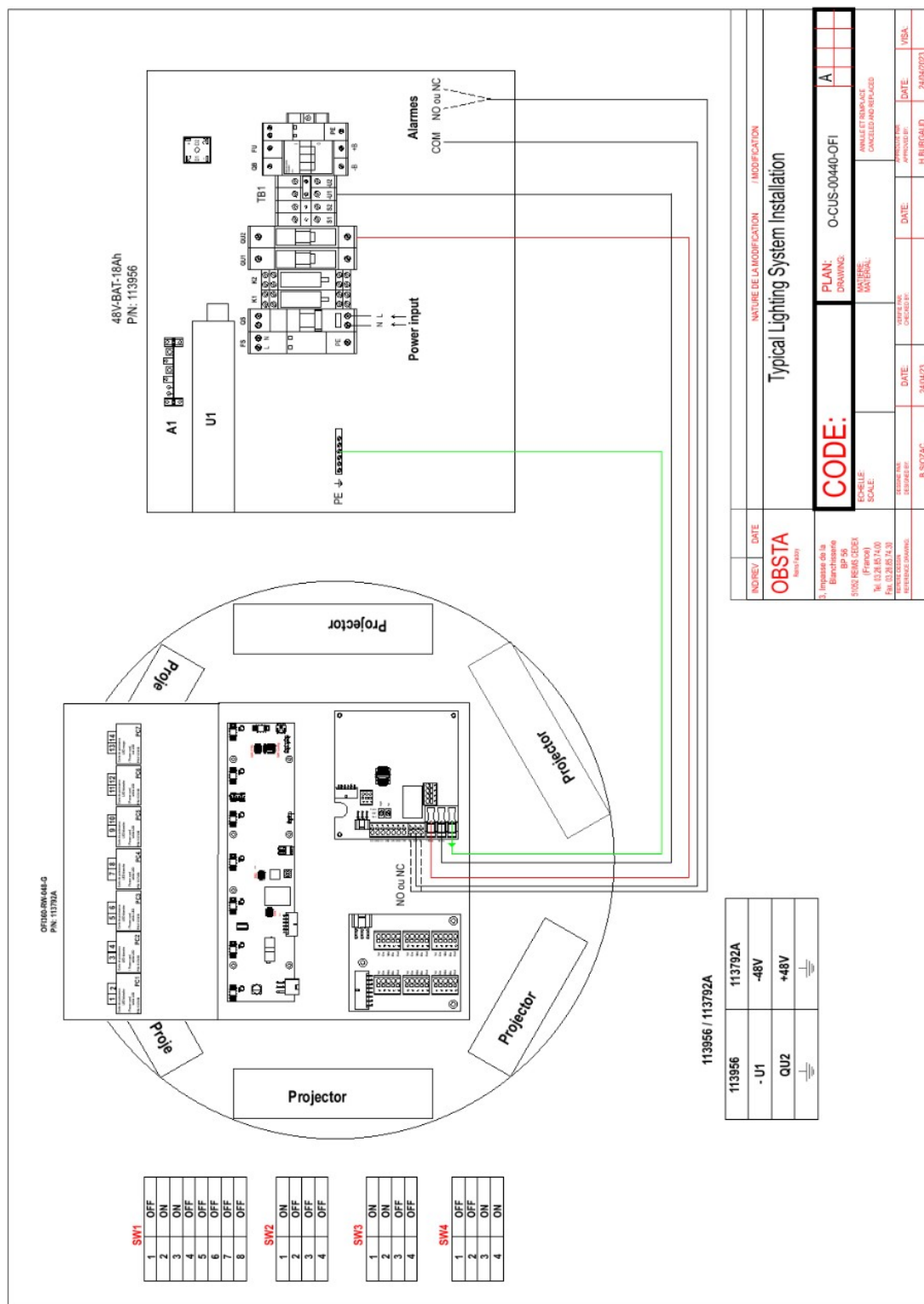
Material : Stainless steel thickness min. 2mm

6.4 Photocell P/N100757

Les dimensions sont en mm
All dimensions are in mm



7 PLAN DE CABLAGE



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