OBSTAFLASH High Intensity

110 - 240Vac / HI type A/B

OFH-120-WW-240-3

INSTALLATION AND OPERATION GUIDE

APRIL 22

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High intensity type A (flash-head with 3 meters of cable per projector part number 113781SC-3 with stainless power supply 230Vac part number 113782A-WW-8E)

Accessories :

- controller OFH-CTR P/N 113625L with default transmitter card P/N 113749B

- controller OFH-CTR-CAN P/N 113625LA

- photocell day/twilight/night P/N 100757

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 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.

2.2 General Description

The OBSTAFLASH HI Lighting System is led high intensity systems manufactured to comply with Table 6.1 under ICAO annex 14 category. Each system consists of 1 beacon covering 120° in azimuth and a cabinet managing power supply and light control.

The OBSTAFLASH HI beacon consists of 2x4 led projectors made in hard glass and aluminium. Each pair of projectors is attached to a stainless bracket which is fixed on a stainless structure.

Each pair of projectors include 4 led circuit (2 circuits / projector) working in active redundancy: in case one circuit is out of work, the other keeps on working in the same azimuth, a remote alarm is triggered, and an intensity default is indicated. OFH-120-WW-240-3 includes a flash-head (lamp) and a stainless power cabinet:

Flash-head composition: (P/N: 113781SC-*3*)

- 1 Stainless bracket
- 8 Projectors with 3 meters of cable

Stainless power cabinet composition: (113782A-WW-8E)

- 1 Interconnection card (Projectors, Power and user cabling)
- 1 Command card to monitor the 8 power cards
- 8 Power cards to drive the current inside a projector
- 1 Surge Protection Device (SPD) On the Interconnection card
- 2 Power supplies in active redundancy
- 1 Supply Card (Power supply inter-connexion) to connect the 8 projectors, the AC power and control cable going to the controller

2.3 Stainless power cabinet overview

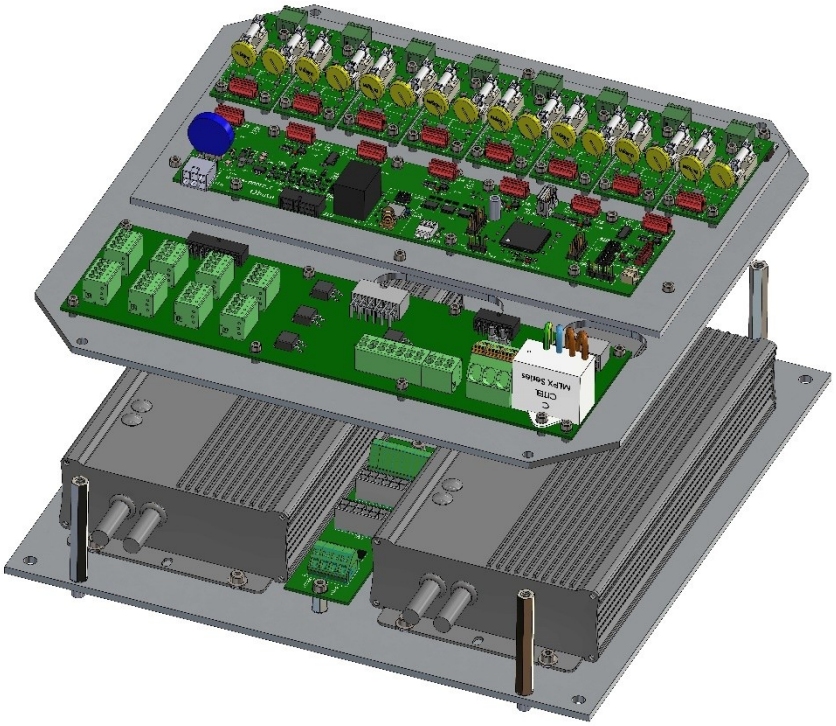


Figure 1 : Cabinet overview

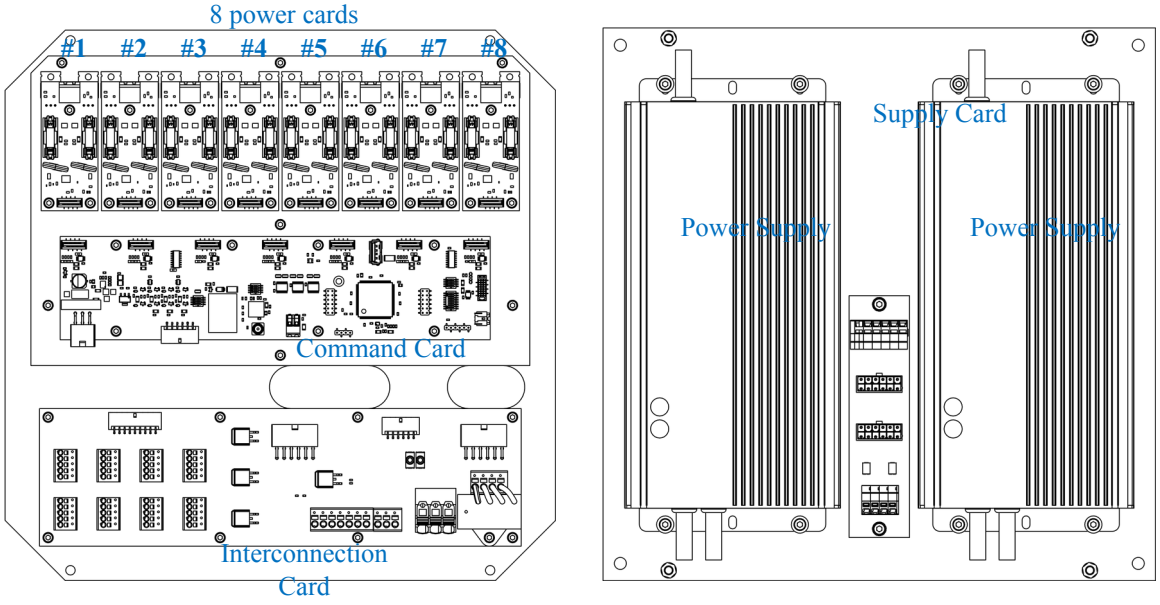


Figure 2 : Cabinet's level overview

2.4 Cards inside the stainless power cabinet

2.4.1 Interconnection Card

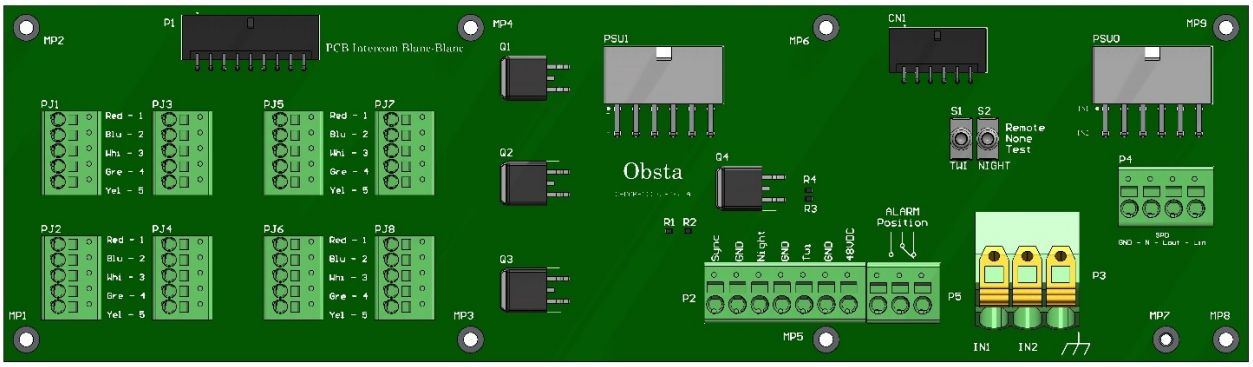


Figure 2 : Interconnection Card overview

P3: Power input to be connected from left to right Line, Neutral, Earth
P4: SPD Device connector
P2: External communication signals for flash and mode (Day, Twilight, Night) synchronisation
P5: alarm (common with normally open and normally close)
S1: Test switch for Twilight: Manual force the Twilight signal (Must be always in remote position for normal operation)[1]
S2: Test switch for Night: Manual force the Nigh Signal (Must be always in remote position for normal operation)
PJ1 to PJ8: Projector connector must be connected according to the cable colour or number.
Other harnesses are cabled directly from factory. Do not modify the cabling without Obsta's direct consent.

2.4.2 Command Card

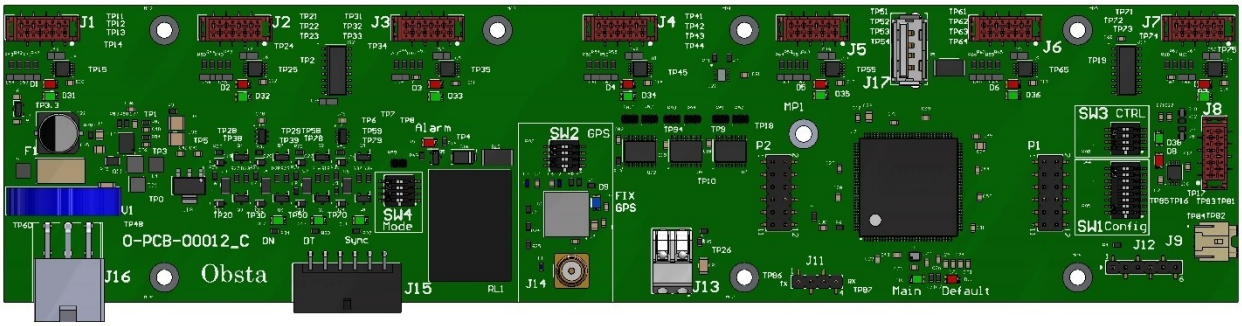


Figure 3 : Command Card view

J1 to J8 : Connected to a dedicated Power card. Near each connector, a pair of led (Green & Red) is signalling the status of the power card hence the associated projector, see figure 4 below
J9 : Connected to an other command board for internal synchronisation (specific)
J13 : Connector for photo resistor application (specific)
J14 : Connector for GPS antenna
J17: USB connector used for reprogramming the Card & retrieving event log (Do not operated any USB device without Obsta's consent)

[1] When "night" mode is forced twilight mode is ignored

Power Card led : 8 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

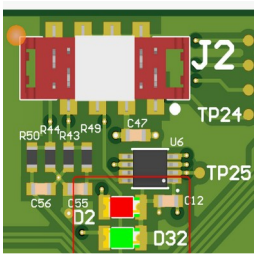


Figure 4 : Power Card Led

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

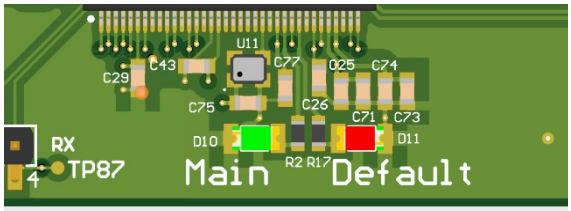


Figure 5 : Command Card Operation Led

Mode Led: 3 leds are present to inform about synchronisation and Mode information.
- "Top sync" for synchronisation: blink at each lamp flash in "master" configuration or at each flash request received from controller
- "DT" for Twilight status[2]
- "DN" for Night status[1]

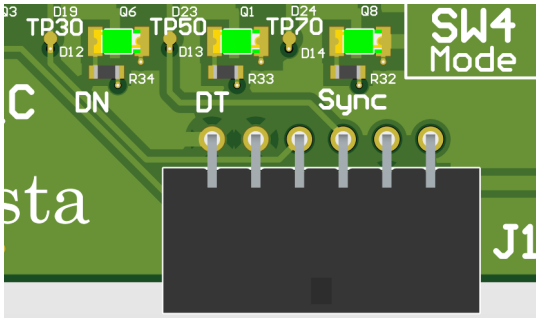


Figure 6 : Commande Card Mode Led

Switches are present to allow multiple kind of operation:
- SW1: Config select the associated topology and configuration (FPM, Flash frequency, etc …)[3]
- SW2: GPS: set synchronization with GPS (if used)
- 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.

2.4.3 Power card

The power cards regulates the current of the 16 led circuits. Each power card drive 2 led circuits inside each projectors. The power supply unit includes 8 power cards. Each card is affected to the associated projector number on the inter-connexion board. Each power card is associated with a projector from left to right (PJ1 → Power Card #1 … PJ8 → Power Card #8).

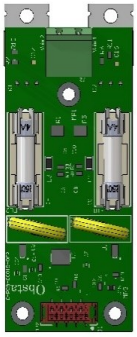


Figure 7 : Power Card

[2] Depending on the switch configuration and operation mode led status could differ.

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

2.5 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 8)

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 high intensity is a full system design to operate according 3 modes: Day, Twilight, Night. Each mode has its own flash duration, frequency, luminous power.

3.2 Switches configuration

3.2.1 SW1: Configuration

Configuration is set in the factory as per working as a high intensity type A

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)

When used with an external controller, 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		
3	Sync1		
4	In case of absence of GPS signal		

Sync0	Sync1	Comment (dip-switch 2 and 3)
0FF	**0FF**	**Flash sequence start at the second "0" of each minute**
OFF	ON	Flash sequence delayed by 1/13th of period from second 0 second
ON	OFF	Flash sequence delayed by 3/13th of period from second 0 second
ON	ON	Flash sequence start at the second "1" of each minute

	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 ORN + ORD: Override the mode and force it into Twilight mode

Important remark: If the system lost the information from the controller, the GPS is automatically 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 (the sun is -6° below the horizon)

3.2.3 SW3: Control

When used with an external controller, the normal position is **bold**

#	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: Synchronisation signal for flashes is emitted by the beacon Slave: Synchronisation signal for flashes is requested (configuration by default with external controller). 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 ORN: Override the mode and force it into Night mode ORN + ORD: Override the mode and force it into Twilight mode
4	ORT	-	

3.2.4 SW4: Mode

This switch will select the sensor used for switching mode

External signal is selected and coming from the controller at the bottom

#	ON	OFF	Comment
1	Photores	-	Built-in photo-resistor is selected to detect Day / Twilight / Night[4]
2	**External**	-	External signal is required for switching mode (Connected to the Interconnection Card)
3	GPS	-	GPS will calculate the switching time according to localisation and astronomical twilight
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	-

[4] Optional equipment

3.3.2 Power Card Led

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

Name	Parameter	Min	Typical	Max	Unity
	Electrical				
$V_{\square}$[5]	AC Power Input Voltage	110	120 or 240	264	Vac
F	AC Frequency	47	50 or 60	63	Hz
I_{rush}	Cold start inrush current			70	A
P_{avg}	Average Power consumption (40FPM 200ms day mode)			100	W
V_{logic}	Voltage for signal (Synchro, Night, Twilight)	30	48	55	Vdc
	Light Output				
Fl_{rate}	Flash Rate		40		FPM
B_{pat_h} $B_{pat_v}R$	Beam Pattern: Horizontally Vertically Ratio Intensity 0° / -10°	3	 120 6	 7 3	 ° ° %
Lum_{Day}	Day Luminosity ±25%		200 000		Cd
Lum_{Twi}	Twilight Luminosity ±25%		20 000		Cd
Lum_{night}	Night Luminosity ±25%		2 000		Cd
FD_{Day}	Flash Duration Day		200		ms
FD_{Twi}	Flash Duration Twilight		200		ms
FD_{Night}	Flash Duration Night		200		ms
	Mechanical Properties				
M_{PSU}	Mass of the Power supply		~ 15.5		Kg
M_{FH}	Mass of the Flash head		~ 14		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 220 580 x 350 x 170		 mm mm
	Operating Environment				
$W_{T°C}$	Working Temperature	-40	20	55	°C
HR	Relative Humidity	5		95	%

[5] Product can work under Direct Current Voltage, for more information about this operation please contact Obsta.

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 OFH-120 & 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.

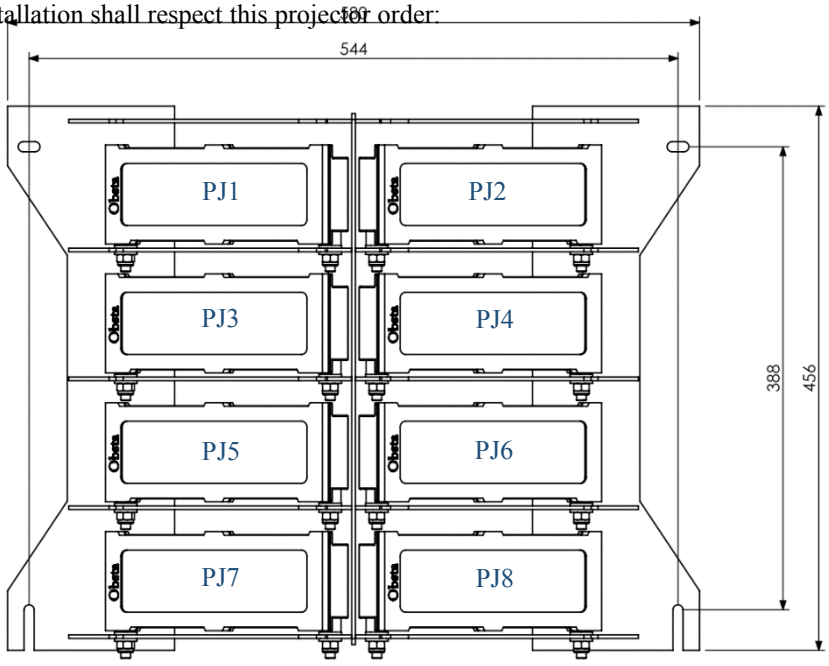
Each part of the kit must be correctly fixed to the structures. Cabinet shall be placed in upright position (Cable gland oriented to the ground)

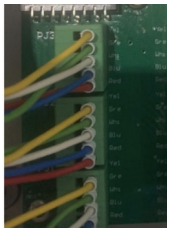
Cable shall be installed in a fixed position with cable clamp not allowing any oscillation movement du to wind pressure.

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 king of perturbation.

4.2.2 Flash Head Cabling

Flash head consist of 8 projectors. Each projector is numbered and associated to a Connector on the interconnection card. Installation shall respect this projector order:





Connection to the connector (PJ1 up to PJ8) of the interconnection Card shall be connected as the silk screen. Silk screen indication shall be respected for cabling. Coloured or numbered wire (Depending of the cable manufacturer or according to Obsta cabling drawing).

Isolated Cable End of 0.5mm² must be used to connect wire into the connectors.

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 controller) or on the controller (if there is a controller).

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 synchronisation. 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 authorised 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.

4.4 Controller - Optional

Optional accessory: OFP Smart controller.

A smart controller can be connected to the power supply. This controller will be able to fully monitor the lamp and to communicate operation status and detailed defaults. Cabling and installation must following instructions associated to this controller.

For more information please see the manual of the controller

5 MAINTENANCE

5.1 Annual visit

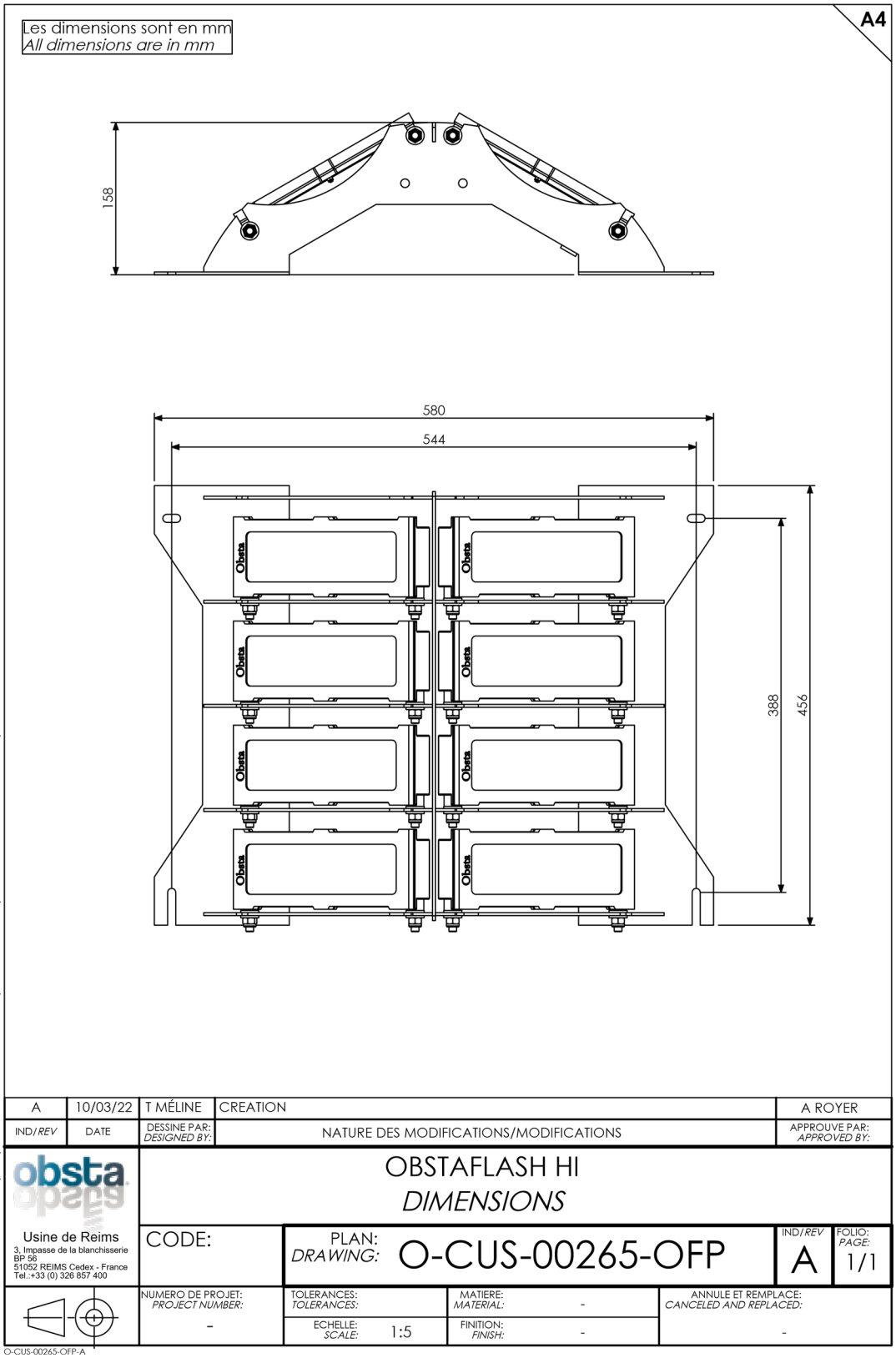
Test	Frequency	Action	Sanction	Solution
Cable	Annual	- Tighten Power card connector's screw - Tighten Projector's connector plugged on the PSU		
Waterproof	Annual	Visual	No water inside	Search the water leak
Corrosion	Annual	Visual	No excessive corrosion	Replace defective part
Power supply	Annual	Visual	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

Command Card	P/N: 113744B
Power Card	P/N: 113741B
Supply Card	P/N: 113748B
Harness wire kit	P/N : 113760B
Photocell	P/N: 113135
SPD	P/N: SPD-HI
Power Supply (AC/DC Converter)	P/N: 113742B
Projector RW with 3 meter of cable	P/N: 113761-3

6 DRAWINGS

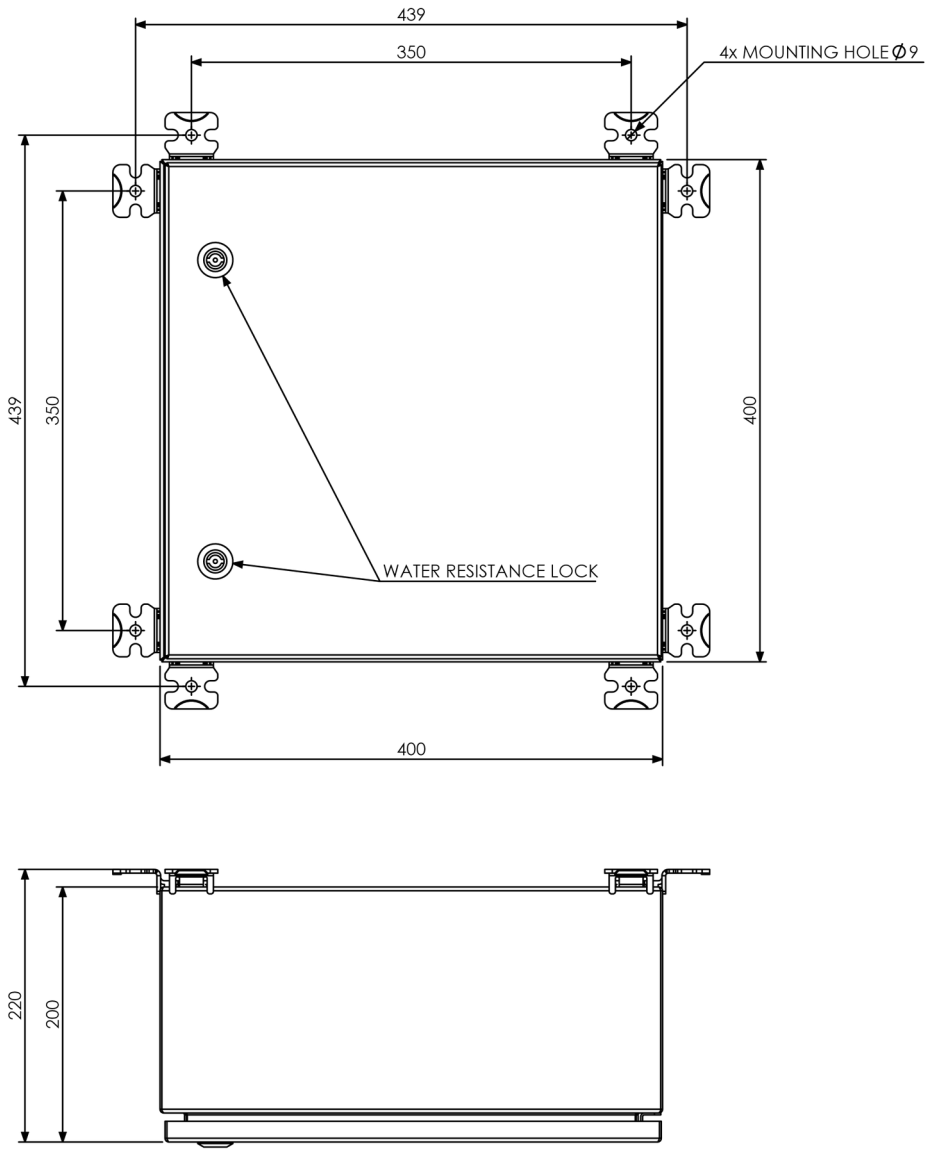
6.1 Flash-head (lamp) dimensions



6.2 Stainless power cabinet dimensions

A4

Les dimensions sont en mm
All dimensions are in mm



A	10/05/22	T MÉLINE	CREATION	A ROYER
IND/*REV*	DATE	DESSINE PAR: *DESIGNED BY:*	NATURE DES MODIFICATIONS/MODIFICATIONS	APPROUVE PAR: *APPROVED BY:*

obsta
Usine de Reims
3, Impasse de la blanchisserie
BP 58
51052 REIMS Cedex - France
Tel.:+33 (0) 326 857 400

CABINET 400x400
DIMENSIONS

CODE:

PLAN: *DRAWING:* O-CUS-00301-OFP

IND/*REV*: A

FOLIO: *PAGE:* 1/1

NUMERO DE PROJET: *PROJECT NUMBER:* PR2002

TOLERANCES: *TOLERANCES:* +/- 0.2 mm

ECHELLE: *SCALE:* 1:5

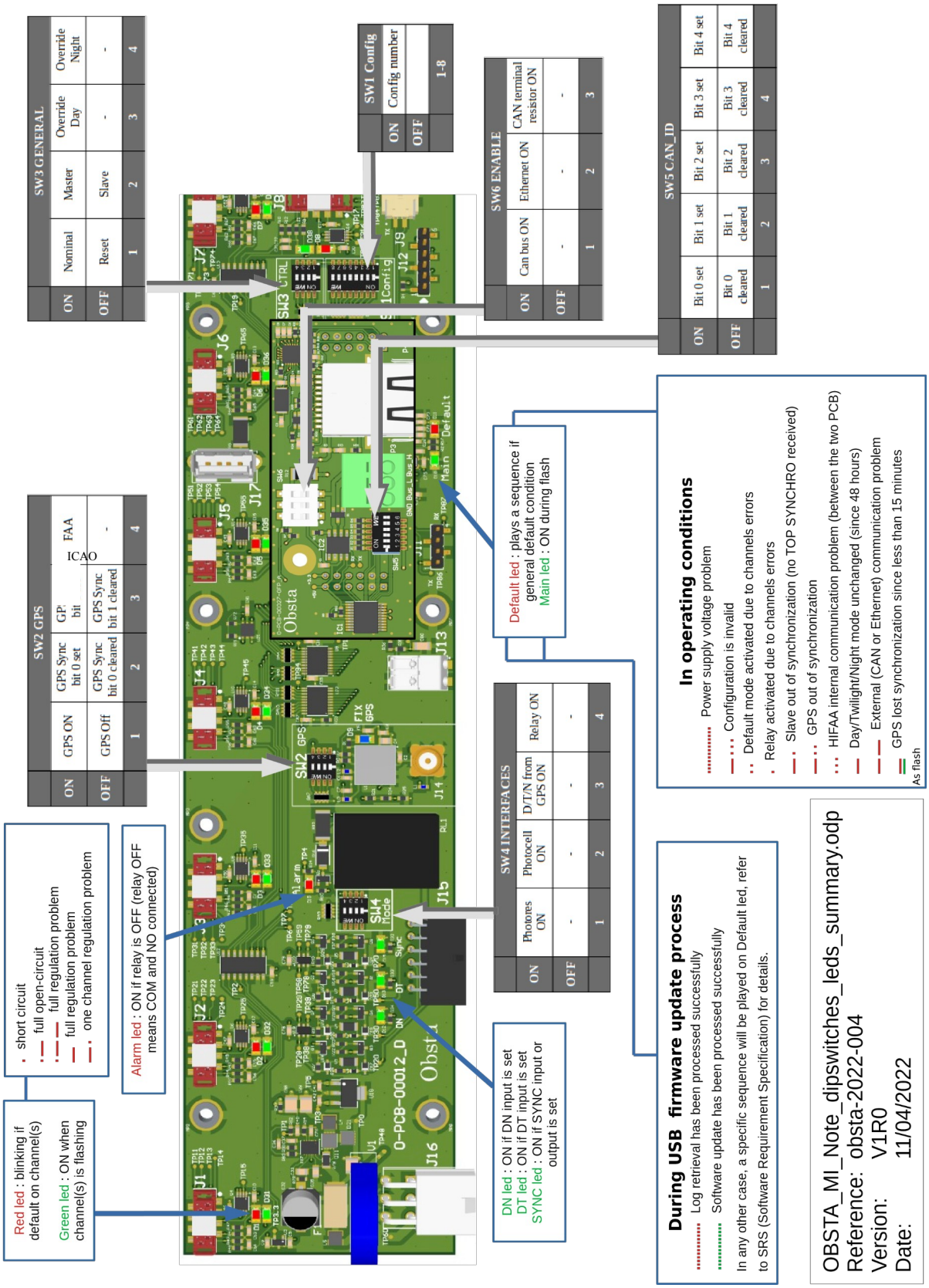
MATIERE: *MATERIAL:* INOX

FINITION: *FINISH:* -

ANNULE ET REMPLACE: *CANCELED AND REPLACED:* -

O-CUS-00301-OFP-A

6.3 Tool sheet command card



6.4 Cabling Drawing