

# OBSTA

*Obstacle warning lights*



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# INTRODUCTION

## OBSTA technique for obstruction lights

The presence of obstacles (buildings, chimneystacks, towers, cranes, HV lines, etc...) is a major hazard for aircraft. The appropriate authorities have defined rules on the marking of such obstacles to obtain the required degree of safety.

The organizations involved (ICAO, STNA, FAA, etc...) have drawn up regulations defining how dangerous obstacles must be marked. Beacon lights must offer absolutely continuous service (for safety) and are frequently installed in highly inaccessible positions. Replacing obstruction lights therefore implies delicate and costly maintenance.

## Main characteristics of OBSTA's lamp

### Cold neon discharge type

For more than 50 years, OBSTA has its own glassmaking and manufactures the cold-cathode rare gas (neon) lamp, key element for a long lifetime of the light : all the manufacturing steps from the design of the glass turns, the electrode setting, the filling of the neon gas up to the final lamp are done. Based on our experience, lifetime our cold neon discharge is 10 years. In some case it can reach 20 years and more if the power converter is still working.

Cold neon discharge lights offer :

- Inherent generation of the aviation «red»,
- Very long proven lifetime whatever are ambient temperature and climatic conditions,
- Excellent luminous efficiency,
- Not sensitive to high temperature and electromagnetic fields.

### LED obstruction light (NAVILITE series)

Theoretically at 20°C, LED lifetime can be as long as 100 000 hours (about 11 years). In reality, the LED's lifetime depends on many conditions that include ambient temperature, ambient electromagnetic fields and conception of the light like heat dissipation and power supply reliability. NAVILITE series has been designed on a one-piece molded assembly. The molding solution excellent heat dissipation for optimum LED performance and a perfect waterproofing. A reasonable real lifetime estimation of our NAVILITE is almost 5 years.

### Xenon obstruction light

Xenon obstruction light medium and high intensity does have a very modular design. The «plug-in» modular construction provides easy maintenance and cost effective solution.

## Sensitivity of neon and led light compared to incandescence light

Lamp type	Lifetime	Climatic sensitivity	Electromagnetic sensitivity	Luminous intensity
Incandescence lamp	Approx 4000 hours	Yes (vibrations)	No	Remains constant and homogeneous
Diode lamp	In theory 100 000 hours	Yes (sensitive to high temperature)	Yes	Depends on temperature
Cold neon discharge	100 000 hours *	No	No	Remains constant and homogeneous

\* typical lifetime of OBSTA lights based on 50 years of experience in this technology.

# REGLEMENTATION

Any object which could represent a hazard for low-flying aircraft must be marked by beacon lights. The International Civil Aviation Organization (ICAO) lays down, in appendix 14 (Chapter 6) of its convention, internationally-applicable rules on the characteristics of the beacons and their installation. A few of the main points of the regulations on type of obstacles which must be marked, and the corresponding installation rules, are given below.

## Extract from annex 14 ICAO

Extract from table 6-3. Characteristics of obstacle lights

Light type	Color	Signal type/ (flash rate)	Peak intensity (cd) at given background luminance			Vertical beam spread
			Above 500 cd/m <sup>2</sup>	50-500 cd/m <sup>2</sup>	Below 50 cd/m <sup>2</sup>	
Low intensity type A (fixed obstacle)	Red	Fixed	N/A	10 min.	10 min.	10°
Low intensity type B (fixed obstacle)	Red	Fixed	N/A	32 min.	32 min.	10°
Medium intensity type A	White	Flashing (20-60 fpm)	20 000 +/- 25 %	20 000 +/- 25 %	2 000 +/- 25 %	3° min.
Medium intensity type B	Red	Flashing (20-60 fpm)	N/A	N/A	2 000 +/- 25 %	3° min.
High intensity type A	White	Flashing (40-60/min)	200 000 +/- 25 %	20 000 +/- 25 %	2 000 +/- 25 %	3° - 7°

### Position of beacon lights

6.3.11 One or more low-, medium- or high intensity obstacle lights shall be located as close as practicable to the top of the object. The top lights shall be so arranged as to at least indicate the points or edges of the object highest in relation to the obstacle limitation surface.

6.3.12 Recommendation - In the case of chimney or other structure like function, the top lights should be placed sufficiently below the top so as to minimize contamination by smoke etc...

6.3.14 In the case of an extensive object or of a group of closely spaced objects, top lights shall be displayed at least on the points or edges of the objects highest in relation to the obstacle limitation surface, so as to indicate the general definition and the extent of the objects. If two or more edges are of the same height, the edge nearest the landing area shall be marked. Where low-intensity lights are used, they shall be spaced at longitudinal intervals not exceeding 45 m. Where medium-intensity lights are used, these shall be spaced at longitudinal intervals not exceeding 900 m.

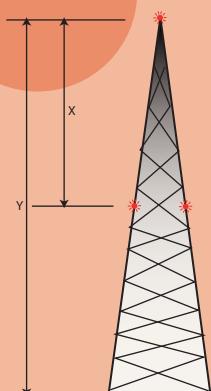
6.3.15 Recommendation - When the obstacle limitation surface concerned is sloping and the highest point above limitation surface is not the highest point of the object, additional obstacle lights should be placed on the highest point of the object.

6.3.22 The number and arrangement of low-, medium- or high-intensity obstacle lights at each level to be marked shall be such that the object is indicated from every angle in azimuth. Where a light is shielded in any direction by another part of the object, or by an adjacent object, additional lights shall be provided on that object to be lighted. If the shielded light does not contribute to the definition of the object to be lighted, it may be omitted.

# GUIDE OF CHOICE

**Choice of the obstruction lights and rules are only given for information only. They are based on ICAO recommendation and practice.**

## Tower

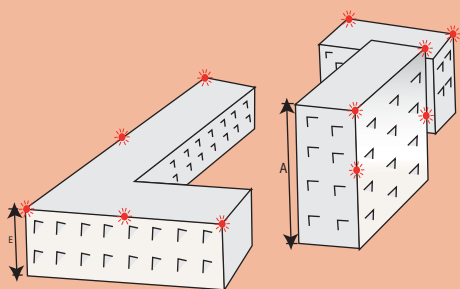


Number of lights =  $N = \frac{Y(m)}{45}$

Distance between lights =  $X = \frac{Y}{N} < 45m$

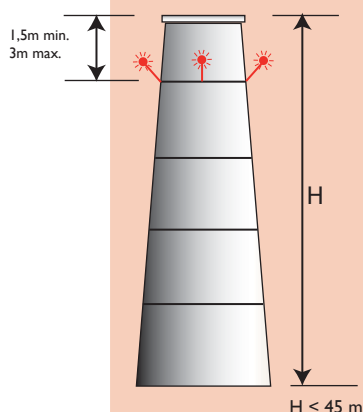
Height	Night only operation	Day and Night
<b>Below 45 meters</b>	2 low intensity type A or B at the top	
<b>45 m. up to 105 meters</b>	2 low intensity type B at the top 3 low intensity type B at intermediate level(s) every 45 meters on the periphery of the tower.	1 or 2 white medium intensity type A at the top.
<b>Above 105 meters</b>	1 or 2 medium intensity lights type B at the top. 3 low intensity lights type B at intermediate levels at 120°.	1 or 2 white medium intensity type A (white) at the top. 3 medium intensity type A at intermediate levels.
<b>Above 150 meters</b>	3 high intensity lights at 120° every 150 meters.	

## Buildings, Hangar...



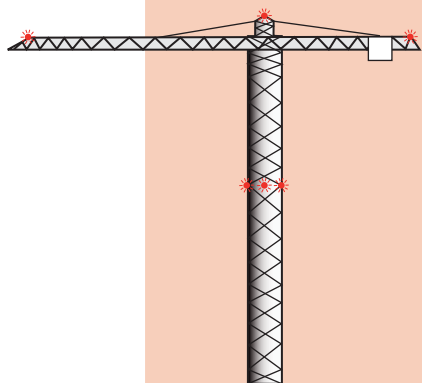
Height	Night only operation	Day and Night
<b>Below 45 meters</b>	Low intensity type A or B lights at each edge of building and at regular interval every 45 meters.	
<b>Above 45 meters</b>	Low intensity type A or B lights at each edge of building and at regular interval every 45 meters. Intermediate lights every 45 meters.	1 or 2 white medium intensity type A (white) at the top. In case of a building exceeding 900 m. length, additional lights should be installed at the edge of the building.

## Chimney



Height	Night only operation	Day and Night
<b>Below 45 meters</b>	3 up to 4 low intensity type A lights placed 1,5 meters up to 3 meters below the top to avoid smokes to hide the lights.	
<b>45 meters up to 105 meters</b>	3 up to 4 low intensity type B lights placed 1,5 meters up to 3 meters below the top. 3 up to 4 low intensity type B lights at intermediate level(s) 45m.	3 up to 4 white medium intensity lights type A placed 1,5 meters up to 3 meters below the top.
<b>Above 105 meters</b>	3 up to 4 medium intensity type B (red) placed 1,5 meters up to 3 meters below the top. 3 up to 4 low intensity type B every 45m.	3 up to 4 white medium intensity lights type A placed 1,5 meters up to 3 meters below the top. 3 up to 4 white medium intensity lights type A at intermediate levels.
<b>Above 150 meters</b>	3 high intensity lights at 120° every 150 meters.	

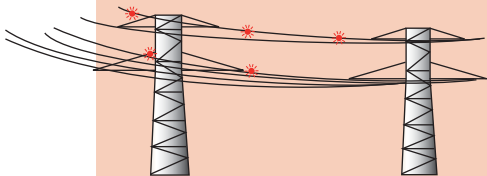
## Cranes



Height	Night only operation	Day and Night
<b>Below 45 meters</b>	3 low intensity type A or B lights on the jib, counter jib and crane-top.	
<b>45 meters up to 105 meters</b>	3 low intensity lights type B at the top on the jib, counter jib and crane-top. 3 low intensity lights type B at the intermediate levels.	1 or 2 white medium intensity type A (white) on the crane-top. In case of more than one crane, additional lights should be installed and synchronized.
<b>Above 105 meters</b>	1 or 2 red medium intensity type B on the crane-top. In case of more than one crane additional lights should be installed and synchronized	1 or 2 red medium intensity type A on the crane-top. In case of more than one crane, additional lights should be installed and synchronized.
<b>Above 150 meters</b>	3 high intensity lights on the crane top	

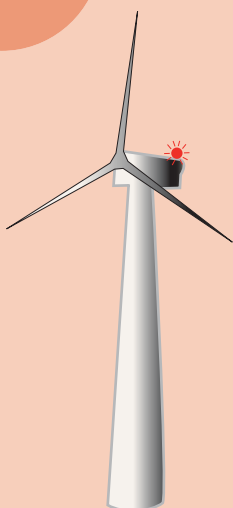


## Transmission lines



	Night only operation	Day and Night
<b>Tower light</b>	2 low intensity type A or B lights at the top of each tower	
<b>High voltage cable from 60 kV up to 550 kV</b>	Balisors at each side of the tower at a maximum distance of 10 meters and every 70 meters near airport and every 105 meters in other case	Warning spheres every 35 meters near airport and every 52 meters in other case + Balisors at each side of the tower at a maximum distance of 10 meters and every 70 meters near airport and every 105 meters in other case

## Windmills



Night only operation	Day and Night
1 medium intensity type B (red) located on the top of the turbine. In case of a group of windmills, additional lights at the circumference of the farm every 450m and synchronized	1 medium intensity type A (white) located on the top of the turbine. In case of group of windmills, additional lights at the circumference of the farm every 900m and be synchronized.

## CHOICE OF OBSTRUCTION LIGHTS

*depending on power supply configuration*

	Obstruction lights without back-up in case of failure of main power supply	Obstruction lights with 12 hours of autonomy in case of main power failure	Obstruction lights powered through solar generator
<b>Low intensity type A</b>	OBSTA HI STI - <i>page 12</i> or OBSTA STI - <i>page 10</i> or NAVILITE - <i>page 16</i>	OBSTA STI 48V - <i>page 10</i> or NAVILITE 48V - <i>page 16</i> Battery cabinet 48V - <i>page 24</i>	OBSTA STIF 12V - <i>page 8</i> or NAVILITE 12V - <i>page 16</i> Solar generator 12V - <i>page 26</i>
<b>Low intensity type B</b>	OBSTA HI STI - <i>page 12</i> or OBSTA STIF - <i>page 8</i> or NAVILITE B - <i>page 16</i>	OBSTA STIF 24V - <i>page 8</i> or NAVILITE B 24V - <i>page 16</i> Battery cabinet 24V - <i>page 24</i>	OBSTA STIF 24V - <i>page 8</i> or NAVILITE B 24V - <i>page 16</i> Solar generator 24V - <i>page 26</i>
<b>Medium intensity type B (red)</b>	OBSTA MI B - <i>page 20</i>	OBSTA MI B 24V - <i>page 20</i> Battery cabinet 24V - <i>page 24</i>	OBSTA MI B 24V - <i>page 20</i> Solar generator 24V - <i>page 26</i>
<b>Medium intensity type B with low intensity type B</b>	OBSTA HI STI - <i>page 12</i> OBSTA MI B - <i>page 20</i>	OBSTA MI B 24V - <i>page 20</i> OBSTA STIF 24V - <i>page 8</i> Battery cabinet 24V - <i>page 24</i>	OBSTA MI B 24V - <i>page 20</i> OBSTA STIF 24V - <i>page 8</i> Solar generator 24V - <i>page 26</i>
<b>Medium intensity type A (white)</b>	OBSTA MIA - <i>page 20</i>	OBSTA MIA 24V - <i>page 20</i> Battery cabinet 24V - <i>page 24</i>	OBSTA MIA 24V - <i>page 20</i> Solar generator 24V - <i>page 26</i>
<b>High intensity</b>	High intensity light - <i>page 22</i>	-	-
<b>Balisor for catenary lightning</b>	Balisor - <i>page 18</i>		



# Low Intensity

## OBSTA STIF

*The OBSTA STIF is an obstruction light for hazard to low-flying aircraft (chimney, transmission lines, towers) designed for solar generator. The OBSTA STIF offers a power consumption much lower than conventional neon discharge lamp, which reduces size and cost of power supply, batteries and solar panels. The OBSTA STIF is cost effective and provides an ecological progress.*

*The OBSTA STIF based on cold neon discharge principle offers high reliability, robustness in hostile environments (EMC, climatic...) proven long life on all kinds of obstacle like transmission lines, TV towers and exposure in electromagnetic fields and high temperature.*



### Application

The OBSTA STIF is designed as a beacon for marking obstacles (chimney, towers, transmission lines, etc...). The OBSTA STIF falls into the low intensity type A and the OBSTA STIF B falls into the low intensity type B following ICAO definition, it complies also with L810 following FAA definitions.

The principle of cold neon discharge offers :

- inherent generation of the «aviation» red,
- a very long lifetime,
- excellent luminous intensity,
- very low power consumption,
- and compared to led light, a constant luminous intensity whatever are ambient temperature and EMC.

### Description

The OBSTA STIF is a one piece moulded assembly, which includes a constant power converter and the discharge lamp and its special optic. OBSTA revolutionary new optic allows to reduce power consumption.

OBSTA STIF includes of :

- a clear glass envelope,
- a constant-power converter
- perfect watertightness,
- no requirement for a ground connection, which avoids any voltage return from the earth (for example due to lightning). The overall is thus considerably improved,
- a complete screening of the converter and the lamp to reduce electromagnetic interferences with antennas.

The OBSTA STIF also includes :

- protection against transient overvoltage,
- an alarm relay to trigger an alarm or light up an auxiliary lamp (if active redundancy circuits are used).
- in option, a fixing bracket ref. I3125.

The OBSTA STIF is easy to install and requires no servicing.

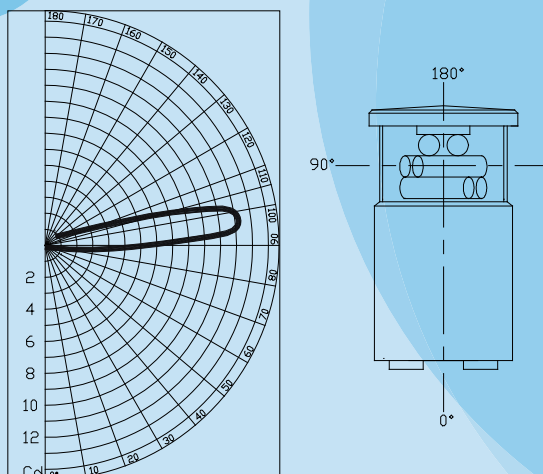
### Main Characteristics

OBSTA part number	Power supply	Luminous intensity	Consumed current	Nominal power	Typical lifetime
STIF - I3410	12VDC	> 10 Cd	500 mA	6 W	> 100 000 h.
STIF B - I3330	24VDC	> 35 Cd	750 mA	18 W	> 100 000 h.

For others power, consult us

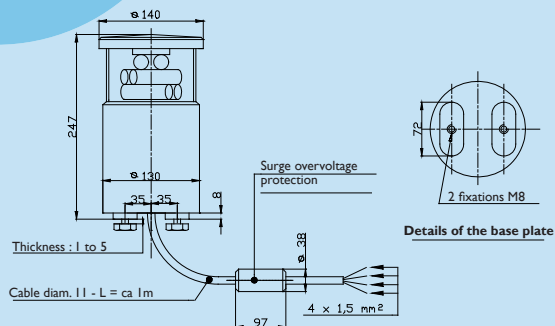
## Complementary Characteristics

### Light intensity diagram



IP degree	66
Operating temperature	-30° + 60° C
Supply voltage	12VDC (-10 ; + 15 %) or 24VDC (-10 ; +15 %)
Weight	3,1 kg
Attachment	by 2 screws (tightening tickness 1 to 5 mm)
Wiring connection	on bare wires (2 power wires, 2 alarm)
Maintenance	without

### Overall dimensions (in mm)



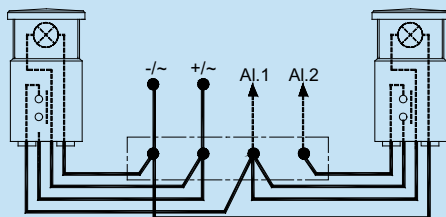
### Specific precaution

For chimney installations, secure the lamp beneath the top (1,5 to 3m) in accordance with ICAO's Recommendations.

For installations with RFI risk, the power supply cable must be shielded

### Complementary functions

- out of order alarm (relay switching)



- automatic emergency lamp configuration enabling automatic control of an emergency lamp and/or an alarm in case of a fault with the main lamp (active redundancy),

- control by crepuscule photoelectric cell,

- CE compliance

# Low Intensity

## OBSTA STI

**The OBSTA STI is an obstruction light for hazard to low-flying aircraft (chimney, transmission lines, towers) powered through 48 V or 24 VDC.**

**The OBSTA STI based on cold neon discharge principle offers high reliability, robustness in hostile environment (EMC, climatic...), proven long life on all kinds of obstacle like transmission lines, TV towers and exposure in electromagnetic fields and high temperature.**



### Application

The OBSTA STI falls into the low intensity type A following ICAO definition.

The principle of cold neon discharge offers :

- inherent generation of the «aviation» red,
- a very long lifetime,
- excellent luminous intensity with a vertical beam much larger than ICAO and FAA requirement,
- low power consumption,
- and compared to led light, a constant luminous intensity whatever is ambient temperature and EMC.

The OBSTA STI takes its power from a DC source which means its power supply can be a back-up source (batteries) to ensure continuous beaconing (see Battery cabinet datasheet).

### Description

The OBSTA STI is a one piece moulded assembly which includes a constant power converter and the proper discharge lamp (5 turns).

The OBSTA STI includes :

- a clear glass envelope,
- a constant-power converter,
- perfect watertightness,
- no requirement for a ground connection, which avoids any voltage return from the earth (for example due to lightning). The overall is thus considerably improved.

The OBSTA STI also includes :

- protection against transient overvoltage,
- circuitry to monitor the operation of the lamp and, in the event of failure, to trigger an alarm or light up an auxiliary lamp (if active redundancy circuits are used).

The OBSTA STI is easy to install and requires no servicing.

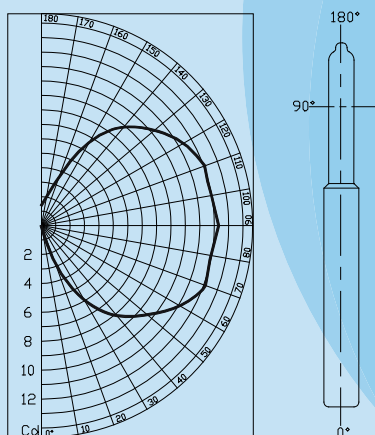
In option, explosionproof OBSTA STI is also available.

### Main Characteristics

Obsta part number	Power supply	Luminous intensity	Consumed current	Nominal power	Typical lifetime
STI ref. I3200	48V DC	> 10 Cd	250 mA	12W	100 000 h
STI ref. I3300	24V DC	> 10 Cd	500 mA	12W	100 000 h

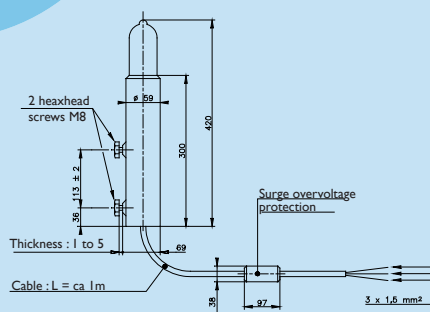
## Complementary Characteristics

### Light intensity diagram



	<b>STI</b>
IP degree	66
Operating temperature	-20 + 60°C
Supply voltage	24 or 48V (-10 ; + 15%)
Weight	1,5 kg
Attachment	by 2 screws (tightening thickness 1 to 5 mm)
Raccordement	on bare wires (2 power wires, 1 alarm)

### Overall dimensions (in mm)



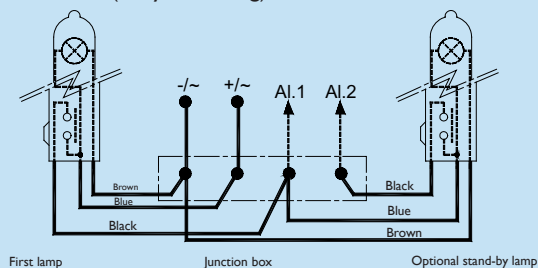
### Specific precaution

For chimney installations, secure the lamp beneath the top (1,5 to 3 meters) in accordance with ICAO's recommendations.

For installation with RFI risk, the power supply cable must be shielded.

### Complementary functions

- out of order alarm (relay switching),



- automatic emergency lamp configuration enabling automatic control of an emergency lamp and/or an alarm in case of a fault with the main lamp (active redundancy),

- control by crepuscular photoelectric cell,

- EMC specification EN 55011 class B.

# Low Intensity

## OBSTA HISTI

*The OBSTA HISTI is an obstruction light for hazard to low-flying aircraft for airport, building, broadcast transmitting towers, chimneys, bridges and transmission lines. This lamp based on cold neon discharge principle offers high reliability, robustness in hostile environments (EMC, climatic...), proven long life on all kinds of obstacle like transmission lines, TV towers and exposure in electromagnetic fields and high temperature. One unique model will adjust itself to the main supply voltages, continuously from 100 V to 240 Vrms 50/60Hz.*



### Application

The OBSTA HISTI is beacon light for obstacles to air traffic (buildings, chimneys stacks, pylons, cranes, etc...). It falls into the ICAO low intensity category, improved (type B).

The principle of cold neon discharge offers :

- inherent generation of the «aviation» red,
- a very long life,
- excellent luminous intensity with a vertical beam much larger than ICAO and FAA requirement,
- and compared to led light, a constant luminous whatever is ambient temperature and EMC.

The OBSTA HISTI draws its power directly from the main supply. The luminous intensity generated by the OBSTA HISTI (35 candelas) is far higher than the minimum the ICAO regulations require, which considerably increases the visibility of the beacon. This value also complies with the FAA L810 standard in force (minimum required : 32,5 candelas).

### Description

The OBSTA HISTI is a one piece moulded assembly which includes a constant-power converter and the proper discharge lamp (13 turns).

This design ensures :

- perfect weatherproofing,
- no requirement for a ground connection, which avoids any voltage return from the earth (for example due to lightning). The overall is thus considerably improved.

The OBSTA HISTI also includes :

- a complete screening of the converter and the lamp to reduce electromagnetic interferences with antennas,
- a clear glass envelope,
- a constant-power converter,
- protection against transient overvoltage,
- circuitry to monitor the operation of the lamp and, in the event of failure, to trigger an alarm or light up an auxiliary lamp (if active redundancy circuits are used).

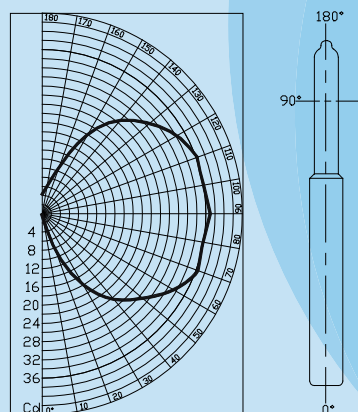
The OBSTA HISTI is easy to install and requires no servicing.

### Main Characteristics

Obsta part number	Power supply	Luminous intensity	Consumed current	Nominal power	Typical lifetime
HISTI ref. I3110	to 110V eff. at 240V 50/60 Hz	> 35 Cd	110V - 730 mA 240V - 370 mA	45 W	100 000 h

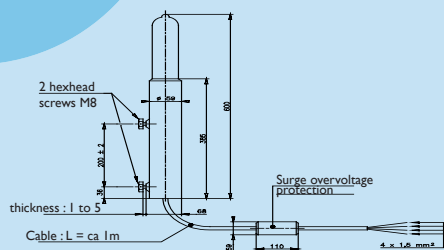
## Complementary Characteristics

### Light intensity diagram



	<b>HISTI</b>
IP degree	66
Operating temperature	-30 to + 60°C
Supply voltage	110 to 240V (+/-10%) 50/60 Hz
Weight	2, 3 kg
Attachment	by 2 screws (tightening thickness : 1 to 5 mm)
Connection	on bare wires (2 power wires, 2 alarm)

### Overall dimensions (in mm)



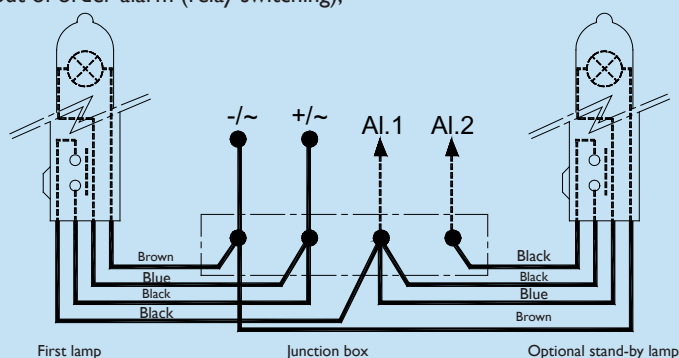
### Specific precaution

For chimney installations, secure the lamp beneath the top (1,5 to 3 meters) in accordance with ICAO's recommendations.

For installation with RFI risk, the power supply cable must be shielded.

### Complementary functions

- out of order alarm (relay switching),



- automatic emergency lamp configuration enabling automatic control of an emergency lamp and/or an alarm in case of a fault with the main lamp (active redundancy),
- control by crepuscular photoelectric cell,
- EMC specification EN 55011 class B.



# Low Intensity

## OBSTA HI STIM

*The OBSTA HI STIM is designed to replace the old OBSTA HI with transformer. The OBSTA HI STIM can be used for any obstacle. It offers robustness in hostile environments under exposure in electromagnetic fields.*



### Application

The OBSTA HI STIM is a beacon light for obstacles to air traffic (buildings, chimney stacks, pylons, crane, etc...). It falls into the ICAO low intensity category improved (type B).

The principle of cold neon discharge offers :

- inherent generation of the «aviation» red,
- a very long life,
- excellent luminous intensity with a vertical beam much larger than ICAO and FAA requirement.

The OBSTA HI STIM draws its power directly from the main supply 230VAC 50/60Hz. The luminous intensity generated by the OBSTA HI STIM (35 candelas) is far higher than the minimum the ICAO regulations require, which considerably increases the visibility of the beacon. This value also complies with the FAA L810 standard in force (minimum required : 32,5 candelas).

### Description

The OBSTA HI STIM is built in two parts. The main part is a completed molded cylindrical assembly which includes a constant-power converter. The second part is the proper discharge lamp (13 turns) screwed on top of the converter.

This design ensures :

- no external high voltage connections,
- perfect weatherproofing of the 2 parts,
- an isolation from the ground which avoids any voltage return from the earth (for example due to lightning).

The OBSTA HI STIM also includes :

- protection against transient overvoltage,
- circuitry to monitor the operation of the lamp and, in the event of failure, to trigger an alarm or light up an auxiliary lamp (if active redundancy circuits are used).

The OBSTA HI STIM is delivered with 2 fixing collars to be mounted with an adjustable distance for easy installation and does not require any servicing

### Main Characteristics

Obsta part number	Power supply	Luminous intensity	Consumed current	Nominal power	Typical lifetime
HISTIM complète - ref. I3150	230 V - 50/60 Hz	> 35 Cd	370 mA @ 240 V	45 W	100 000 h.

#### Spare-part Obsta HISTIM

Designation	Code	Number of turns	Luminous intensity	Typical lifetime
Obsta HISTIM 13 turns lamp	I3156	13	> 35 Cd	100 000 h.
Converter HISTIM 230 Vac	I3155	-	-	100 000 h.

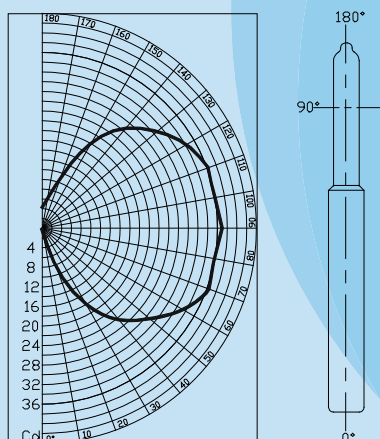
#### OBSTA CLAUDE neon light for old HI transformer

P/N 00653 (5 turns) and P/N 00654 (13 turns)



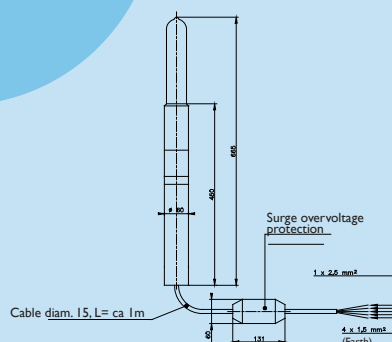
## Complementary Characteristics

### Light intensity diagram



IP degree	66
Operating temperature	-30° + 60° C
Power voltage	220 -240 V (+/- 10%) - 50/60Hz
Weight	3 kg
Attachment	with 2 collars
Raccordement	on bare wires (2 power wires, 2 alarm)
Maintenance	none

### Overall dimensions (in mm)



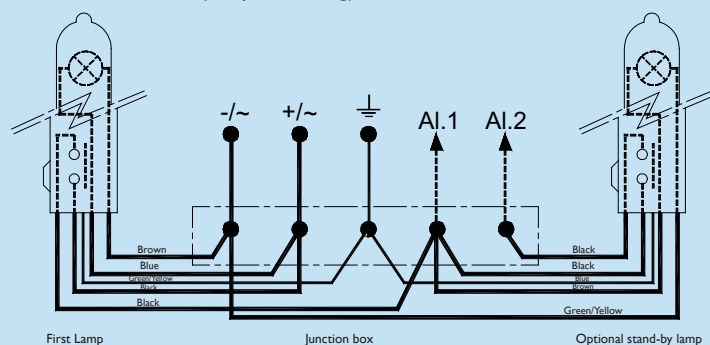
### Specific precaution

For chimney installations, secure the lamp beneath the top (1,5 to 3 meters) in accordance with ICAO's recommendations.

For installations with RFI risk, the power supply cable must be shielded

### Complementary functions

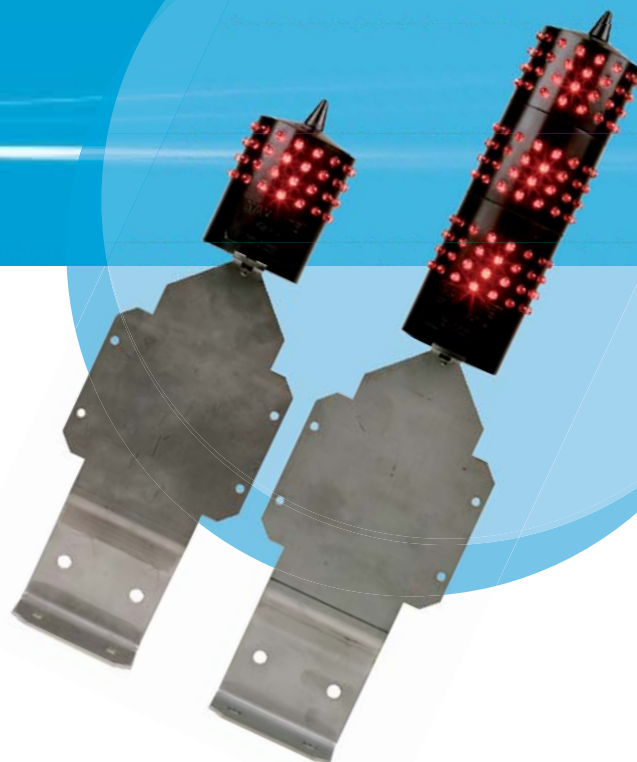
- out of order alarm (relay switching)



- automatic emergency lamp configuration enabling automatic control of an emergency lamp and/or an alarm in case of default with the main lamp (active redundancy),
- control by crepuscular photocell,
- EMC specification EN 55011 class B.

# Low Intensity NAVILITE

The NAVILITE series of obstruction lights is based on LED technology in compliance with ICAO low intensity and FAA L-810 type.



## Application

The NAVILITE series are dedicated to night marking of any kind of air navigation obstacle such as wind mast, towers, cranes, building... The NAVILITE has been designed to replace incandescent obstruction lights or for new installation. The NAVILITE lasts at least 5 times longer than incandescent lights.

Features/Advantages :

- initial luminous intensity twice higher than ICAO and FAA standard.
- good heat dissipation for optimum led performance (LED's are sensitive to high temperature).
- perfectly waterproof, no risk of corrosion,
- redundant circuits for LED's : 16 circuits of 4 LEDs for the 10 cd type and 48 circuits of 4 LEDs for the 35 cd type.

## Description

### NAVILITE

The NAVILITE is a low intensity type A light compliant with ICAO regulation. It is a red steady with a luminous intensity higher than 10 candelas. It is available in 12V, 24V, 48V and 240VAC. The NAVILITE is one piece molded which integrates 4 levels of LED and the wiring connectors.

### NAVILITE B

The NAVILITE B is a low intensity type B light compliant with ICAO regulation and FAA regulation (L810). It is a red steady with a luminous intensity higher than 32,5 candelas. It is available in 12V, 24V, 48V, 120 and 240VAC. The NAVILITE B is one piece molded which integrates 12 levels of LED and the wiring connectors.

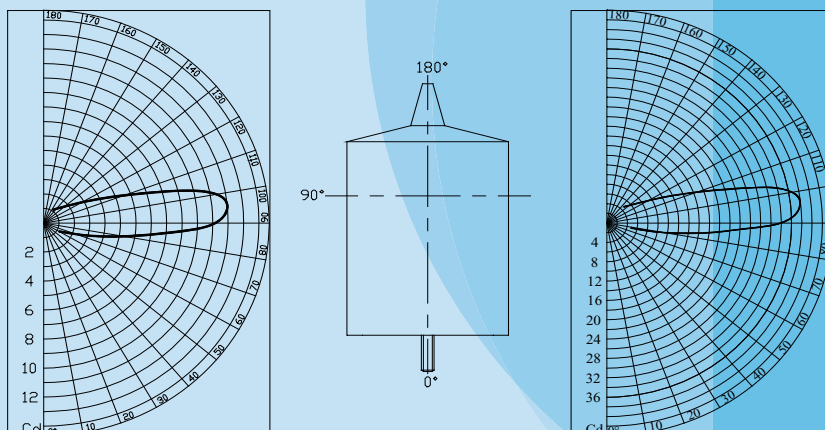
230 V NAVILITE and NAVILITE B have a modular design with separated converter 230VAC/48VDC.

## Main Characteristics

OBSTA part number	Power supply	Luminous intensity	Electrical current	Nominal power	Theoretical lifetime
NAVILITE I3900	48VDC	> 10 Cd	125 mA	6 W	100 000 h.
NAVILITE I3901	24VDC	> 10 Cd	250 mA	6 W	100 000 h.
NAVILITE I3902	12VDC	> 10 Cd	500 mA	6 W	100 000 h.
NAVILITE I3909	240VAC	> 10 Cd	70 mA	6 W	100 000 h.
NAVILITE B I3930	48VDC	> 35 Cd	375 mA	18 W	100 000 h.
NAVILITE B I3931	24VDC	> 35 Cd	750 mA	18 W	100 000 h.
NAVILITE B I3932	12VDC	> 35 Cd	1500 mA	18 W	100 000 h.
NAVILITE B I3933	120VAC	> 35 Cd	190 mA	18 W	100 000 h.
NAVILITE B I3939	240VAC	> 35 Cd	200 mA	18 W	100 000 h.

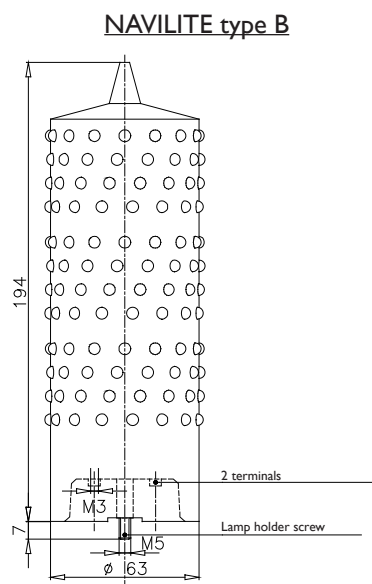
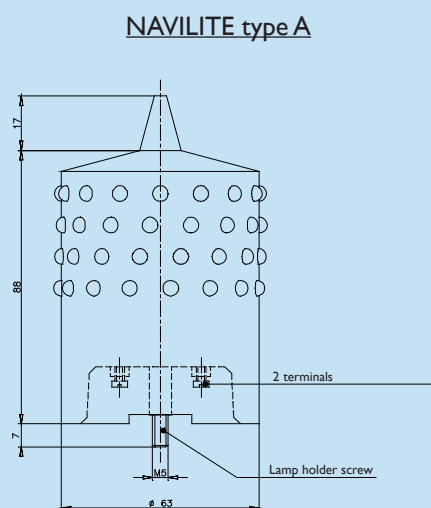
## Complementary Characteristics

### Light intensity diagram



	NAVILITE type A	NAVILITE type B
IP degree	66	66
Operating temperature	-55° to + 55° C	-55° to + 55°C
Power supply	12, 24, 48 V, 230V (+/-10 %)	12, 24, 48, 120V, 230V (+/-10 %)
Weight	370 g	
Attachment	by screw M5	by screw M5
Maintenance	none	none

### Overall dimensions (in mm)



### Installation accessories(in option)

- Fixing bracket - ref. I3920
- Monitoring box - ref. I3940, for 2 NAVILITE 48V with photocell and alarm relay.
- Fixing bracket for vertical or horizontal support.
- Additional mounting set for 30 up to 100 mm pipes.
- Spare part : 230V power supply for NAVILITE ref. I3910 and NAVILITE B ref. I3911

# Low Intensity BALISORS



## Application

High-voltage lines are major hazard for low-flying aircraft. Placing beacons on pylons is not sufficient to ensure safety due to the very long spans of cable (extract of Aerodrom Design Manual chapter 14.7 annex 4).

The BALISOR® system (created by OBSTA in the 60th) is a beacon for high voltage lines. Its conductors take the power required directly from the line.

The system is, therefore, completely self-contained.

Our standard model of BALISOR® fall into the ICAO low intensity category. It is a red fixed light with a luminous intensity higher than 10 candelas.

The neon discharge offers :

- inherent generation of the «aviation» red light,
- a very long life - essential to allow continuing operation of high-voltage lines. Many BALISORS installed over those last 30 years are still working.

## Description

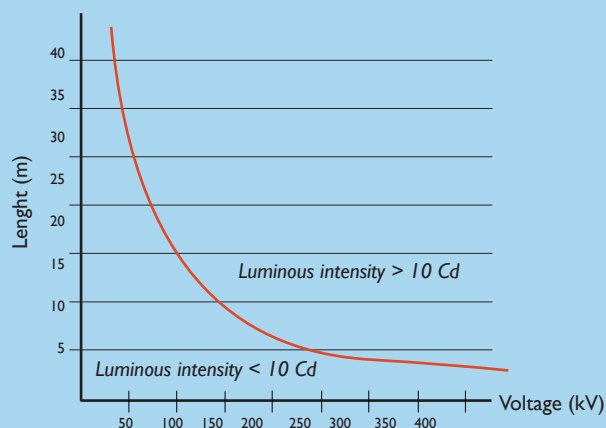
The BALISOR® system comprises :

- a cold neon discharge lamp manufactured by OBSTA,
- a set of capacitive tapings in aluminium which depends on the voltage of the line to be protected,
- a set of flexible accessories for suspension and insulation which depends on diameter of the cable

Options :

- antipollution version with silicone insulators for polluted area (near oil refinery, chemical industry...).

**Lenght of the auxiliary tubing according to the voltage**

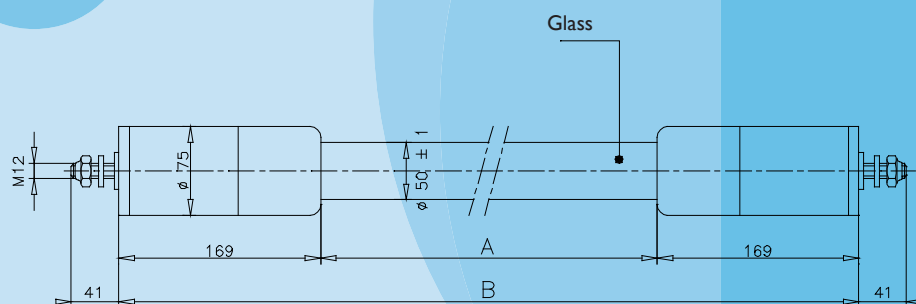


## Main Characteristics

OBSTA part number	Luminous intensity	Voltage of the line	Interference suppression	Typical lifetime
Lamp BALISOR ref. 00616 B33	> 10 Cd	-	yes	> 100 000 h.
Lamp BALISOR ref. 00618 B49	> 10 Cd	60 kV à 550 kV	yes	> 100 000 h.

## Complementary Characteristics

### Lamp weight and dimensions (in mm)



Type	A	B	Weight
Lamp type B	563 +/- 5	901 +/-5	4,7 kg
Lamp type B33	376 +/- 5	714 +/-5	4 kg

Unit weight	Code	Designation	Number of elements depending on line voltage			
			115 kV	132 kV	220 kV	380 kV and +
0,85 kg	00637	Clamp	7	6	4	3
3,50 kg	00621	Insulator	7	6	4	3
0,10 kg	00636	Shunt braid	1	1	1	1
0,50 kg	00628	Simplified auxiliary holder	7	6	-	-
2,00 kg	00631	Lamp holder	-	-	2	2
1,35 kg	00632	Auxiliary tubing holder	-	-	2	1
1,90 kg	00623	Auxiliary tubing	5	4	2	1
0,50 kg	00606	Flexible connector	2	2	-	-
0,50 kg	00624	Lamp end suspender	2	2	-	-
4,70 kg	00618	BALISOR B lamp	1	1	1	1
4,00 kg	00616	BALISOR B33	-	-	-	-

# Medium Intensity

## OBSTA MI

**Extracts from annex 14 ICAO**

**6.3 3 Recommendation** - Where the use of low-intensity obstacle lights, Type A or B, would be inadequate or an early special warning is required, then medium- or high-intensity obstacle lights should be used.

**6.3 7 Recommendation** - Medium-intensity obstacle lights, Type A, B or C, should be used, where the object is an extensive one or its height above the level of the surrounding ground is higher than 45 m. Medium intensity obstacle lights, Type A and C, should be used alone, whereas medium-intensity obstacle lights, Type B, should be used either alone or in combination with low-intensity obstacle lights, Type B.

**Note** - A group of trees or buildings is considered as an extensive object

### Application

Aviation warning system for obstacle such as

- broadcast transmitting towers,
- microwave repeater towers,
- windmills,
- temporary obstruction lighting system on chimneys, cranes for day marking, hyperbolic towers and other structures using high intensity system as permanent obstruction marking.

Medium intensity type A is a white flashing light working day and night, or during the day only.

Medium intensity type B is a red flashing light working during the night only. It can be used with low intensity type B

### Description

Medium intensity lighting system is a two-part assembly, which includes a flashhead and a control cabinet.

This design ensures :

- a flashhead containing right flash tubes more resistant than turning flash tube used in fresnel light,
- a control cabinet containing a modular design easy to maintain.

This lighting system also includes :

- protection against transient overvoltages,
- automatic day/night switching,
- fault monitoring with digital lamp visualization.

In option : fiber optic or GPS module for synchronization of the flashes and day/night switch in case of extensive obstacle.

### Main Characteristics

OBSTA part number	Luminous intensity		Beam spread		Flashes per minute
	Day	Night	Vertical	Horizontal	
White Medium Intensity	> 20 000 Cd	> 2000 Cd	3°	360°	20 or 40
Red Medium Intensity	<del>&gt; 20 000 Cd</del>	> 2000 Cd	3°	360°	20 or 40

OBSTA part number	Main supply	Power consumption max at 40 flashes minutes	Peak VA
I3618 (white)	230 V - 50 Hz	160 W	< 600 VA
I3623 (white)	24 VDC	130 W	< 600 VA
I3620 (red)	230 V - 50 Hz	160 W	< 600 VA
I3619 (red)	24 VDC	130 W	< 600 VA
I3617 (bi-color)	230 V - 50 Hz	160 W	< 600 VA
I3628 (bi-color)	24 VDC	130 W	< 600 VA

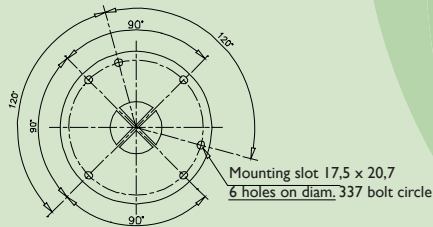


## Complementary Characteristics

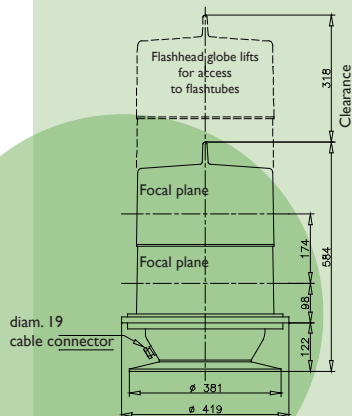
### Weight and Overall dimensions (in mm)

#### Two-coloured Flashhead MI

Weight : 15,5 kg

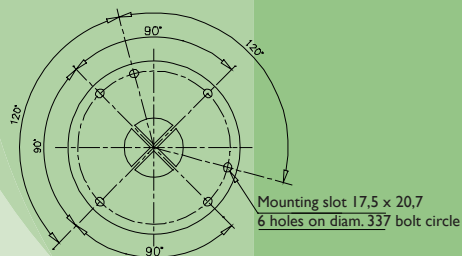


Bottom of flashhead for mounting  
with 3 or 4 fasteners

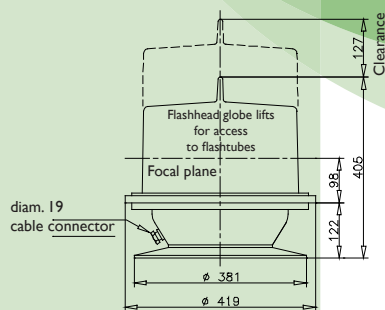


#### Self-coloured Flashhead MI

Weight : 10 kg

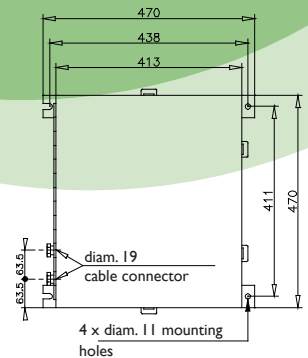
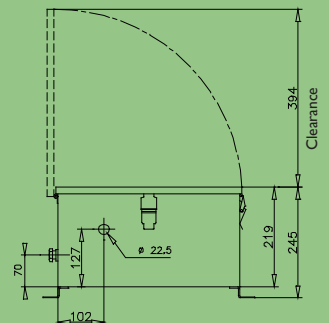


Bottom of flashhead for mounting  
with 3 or 4 fasteners



#### Control cabinet MI

Weight : 24 kg (AC), 18 kg (DC)



### System elements

Obstruction lighting system Medium intensity	Medium intensity	
	Description	Code
Flashhead Control cabinet Switch	White, red or bi-color one per flashhead	I3618, I3623 I3620, I3619, I3617, I3628
Connecting cable between flashhead and control cabinet	length < 200 m	I3700
Spare flashtube assy	xenon type	I3630

### Other Characteristics

- quartz flashtube especially manufactured,
- «weathertight» stainless steel enclosures (in vertical position),
- «plug-in» modular construction with plated contact surfaces,
- coated printed circuits card protects solid state circuitry,
- flashhead and control cabinet separation distance up to 200m (to be specified on the order)
- safety interlock in both flashhead and control cabinet
- day/night automatic switching.

### Options

- master/slave multiple beacon system, by cable or fiber optic,
- GPS module for synchronisation of the flashes and day/night switch,
- synchronisation with High intensity system L.S. I58.



# High Intensity

## OBSTA HI

*Extracts from annex 14 ICAO*

**6.3 3 Recommendation** - Where the use of low-intensity obstacle lights, type A or B, would be inadequate or an early special warning is required then medium or high-intensity obstacle lights should be used.

**6.3 8 Recommendation** - High-intensity obstacle lights, Type A, should be used to indicate the presence of an object if its height above the level of the surrounding ground exceeds 150m and an aeronautical study indicates such lights to be essential for the recognition of the object by day.



### Application

Aviation warning system for any obstacle higher than 150 meters that requires day marking such as :

- broadcast transmitting towers,
- microwave repeater towers,
- similar skeletal structures,
- chimneys, cooling towers and all tall structures.

### Description

High intensity lighting system is modular : flashheads include optic elements and a controller that drives the total equipment.

This design ensures :

- a choice of the number of flashheads,
- the synchronisation of all the flashes,
- the simultaneous switching mode operation,
- an easy installation with adjustable centreline of the light beam.

The HI lighting system also includes :

- protection against transient overvoltages,
- automatic day/twilight/night switching,
- fault monitoring with digital lamp visualization.

### Main Characteristics

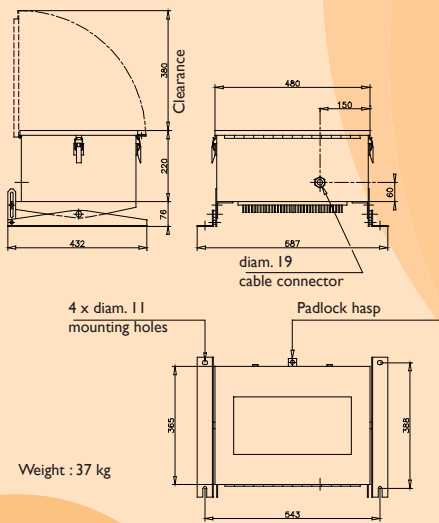
OBSTA part number	Luminous Intensity			Beam spread		Flashes/minute
	Day	Twilight	Night	Site	Azimuth	
High intensity	200 000 Cd	20 000 Cd	2000 Cd	+/- 2°	+/- 60°	40

Main supply	Frequency	Power consumption per light	Elevation of flashhead
230 V	50 Hz	< 0,5 kVA	-2° à +8° to the horizontal

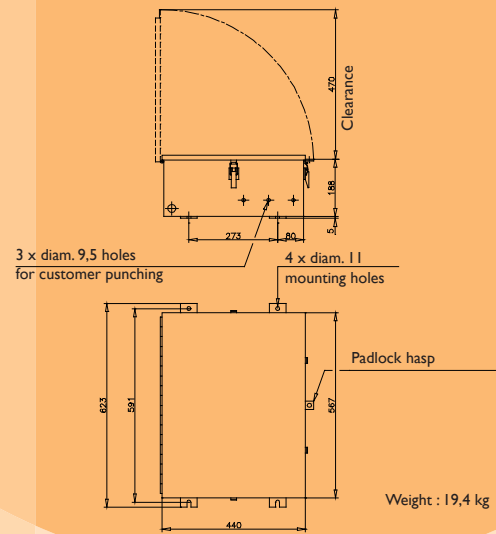
## Complementary Characteristics

### Weight and Overall dimensions (in mm)

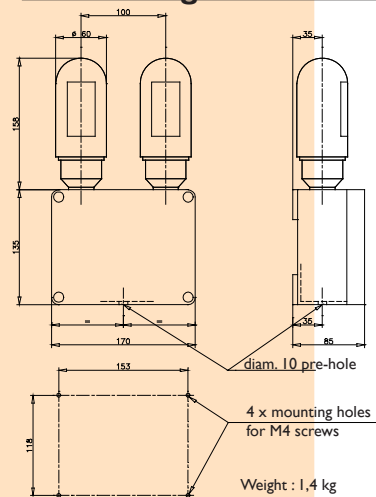
#### Flashhead HI



#### Controller HI



#### Ambient light sensor HI



### System elements

Obstruction lighting system 230 V - 50Hz	High intensity	
	Description	Code
Flashhead	white	I362I
Control cabinet with day/twilight/night switch	supplied 230VAC	I3625
Spare flashtube assy	xenon type	I363I

### Other characteristics

- quartz flashtube especially manufactured,
- «weathertight» stainless steel enclosures (in vertical position),
- «plug-in» modular construction with plated contact surfaces,
- coated printed circuits cards protect solid state circuitry,
- built-in surge arrester,
- one controller for the whole installation,
- fault indicator in the controller (up to 32 flasheads),
- safety interlock in both flashhead,
- day/twilight/night automatic switch.

### Options

Inquire for other configurations.

# Accessories

## POWER CABINET WITH BATTERIES

**Obstacles require constant beaconing and, consequently, a continual electric power supply.**

**OBSTA Power Cabinets can be used with all OBSTA obstruction lights 48V and 24VDC except high intensity system.**



### Application

#### Power cabinet

The obstacles which require permanent back-up must be fed by a battery cabinet that can supply 12 hours of autonomy in case of power failure. This power cabinet draws its power from the AC main supply and outputs a DC voltage 48V or 24V to feed the lights. The range of units available offers a choice to select the most suitable configuration to match the number of lights and the autonomy required.

#### Photocells

OBSTA photocells are used to automatically switch the beacons on or off to match changes in the day/night level (day/night switch). Photocell therefore :

- save power (when operating from power cabinet or solar panels)
- increase back-up autonomy.

### Description

#### Power cabinet

The various components in OBSTA power supply cabinets are located in a metal enclosure. The dry batteries used require no servicing during normal operation. An input transformer with thyristors provides a galvanic insulation with DC voltage.

Auxiliary functions are also available (photocell, weatherproof cabinet, etc...).

The cabinet also includes :

- protection against transient overvoltage,
- protection against complete discharge of batteries.

#### Photocells

OBSTA photocells plug into a socket. A delay system prevents the cell triggering on brief flashes (for example lightning). The actuator is normally open relay.

### Main Characteristics

POWER CABINET		Capacity	Power supply	Output voltage	Max DC intensity	Number max. of Obsta STI for 12 hours autonomy
IP20	IP55					
I3500	I3510	16 Ah	230 V	48V	2,5 A	4 lights STI
I3501	I3511	25 Ah	230 V	48V	4 A	7 lights STI
I3502	I3512	40 Ah	230 V	48V	6 A	12 lights STI
I3506	I3516	7 Ah	230 V	48V	2 A	2 lights STI
I3507	I3517	3,5 Ah	230 V	48V	2 A	1 light STI
I3504	I3514	40 Ah	230 V	24V	8 A	1 light MI 24V at 20 flashes/minute
I3505	I3515	65 Ah	230 V	24V	12 A	1 light MI 24V at 40 flashes/minute

PHOTOCELLS	Power supply	Triggering level
00752	230 V =	50 lux
00755	48 V =	
00754	24 V =	

## Power Cabinet

### Dimensions in mm

Dimensions (mm)	48VDC					24VDC		Double-casing
Capacity	3,5 Ah	7 Ah	16 Ah	25 Ah	40 Ah	40 Ah	65 Ah	All models
Obsta Part number	13517	13516	13510	13511	13512	13514	13515	---
IP degree	20	20	20	20	20	20	20	55
A	600	600	700	800	800	700	800	1000
B	400	400	500	600	600	500	600	800
C	200	200	250	250	250	250	250	300
D	560	560	660	760	760	660	760	960
E	458	458	558	658	658	558	658	858
Indicators	no	no	yes	yes	yes	yes	yes	Depends on models
Weight (kg)	29,4	33,8	62	84	104,8	75,2	135	Add 38,2 kg

IP degree	20
Operating temperature	0 to 45°C
Power supply	220V +/-10% ; 50 Hz
Attachment	secured by wall brackets (except for the 36AH cabinet) or placed on a flat surface
Connection	by terminal
Maintenance	no
Batteries	lead, gelated type

### Specific precautions

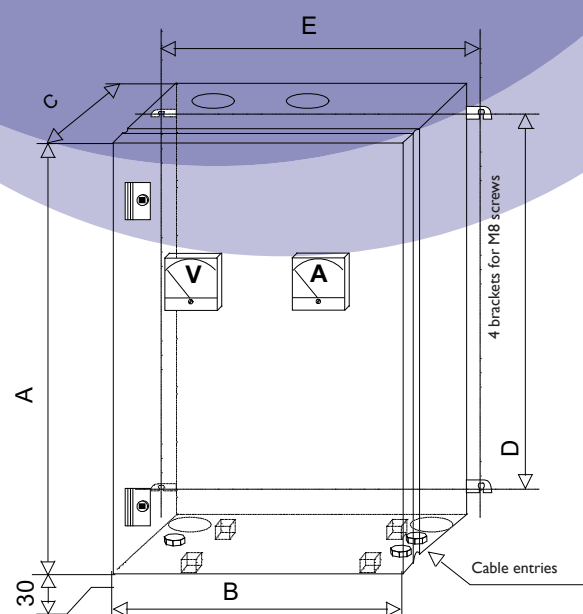
- use indoors (except for double-casing cabinet),
- recharge batteries during prolonged storage.

### Complementary functions

Output voltage control in manual mode or in automatic mode by crepuscular photoelectric cell.

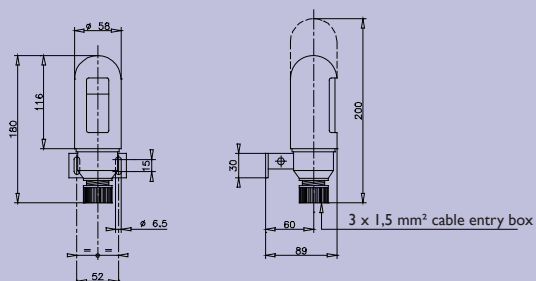
### Other versions

With double-casing for outdoor installation (IP55). See table



## Photocells

### Overall dimensions (in mm)



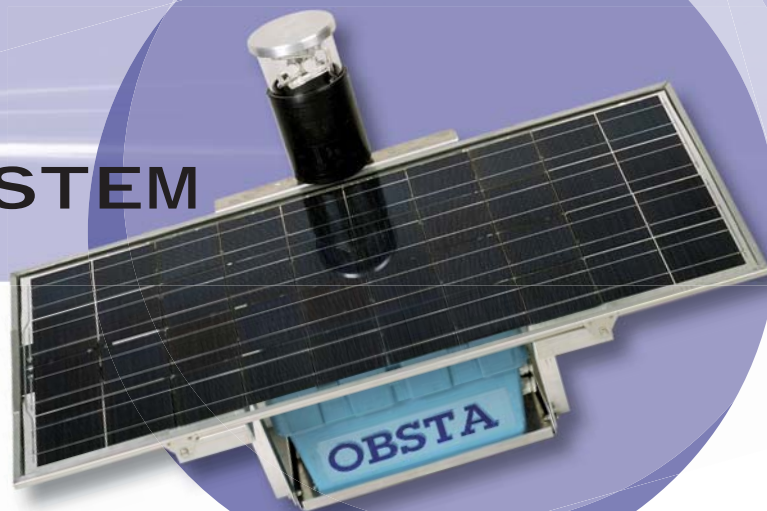
IP degree	67
Operating temperature	-25 to +60°C
Voltage tolerance	-10 ; + 15 %
Consumption	1,5 VA
Weight	300 grs
Attachment	by harness and screws
Connection	screw terminals
Maintenance	none
Complementary functions	10A contact closed in darkness

# Accessories

## SOLAR POWER SYSTEM

*In case no external power supply is available, this external solar power system consists of a compact photovoltaic set designed for delivering sufficient power for the OBSTA 12VDC or 24VDC at night only.*

*The surface area of the photovoltaic panels depends on the location of the site and the number of beacons. Consult us for more information.*



### Application

For one OBSTA 12V (NEON) or NAVILITE 12V (LED) 6W in Europe, 3 solar power system are available depending on location (see map below) :

Area 1 : Solar generator 50Wp with 7 days of autonomy

Area 2 : Solar generator 80Wp with 10 days of autonomy

Area 3 : Solar generator 125 Wp with 15 days of autonomy

For different locations or different kinds of lights, please consult us.

### Description

OBSTA solar panels are self-contained units which fulfill the following functions :

- the conversion of sunlight to electricity (polycrystalline silicon photocell panels)
- the storage and control of the power generated (by a battery-charger system and the associated circuits)
- system safety (protection against complete battery discharge, etc...).

The configuration can be easily adapted to match any specific case. Auxiliary functions are also offered (photoelectric cell, active redundancy, etc...)

### Main Characteristics

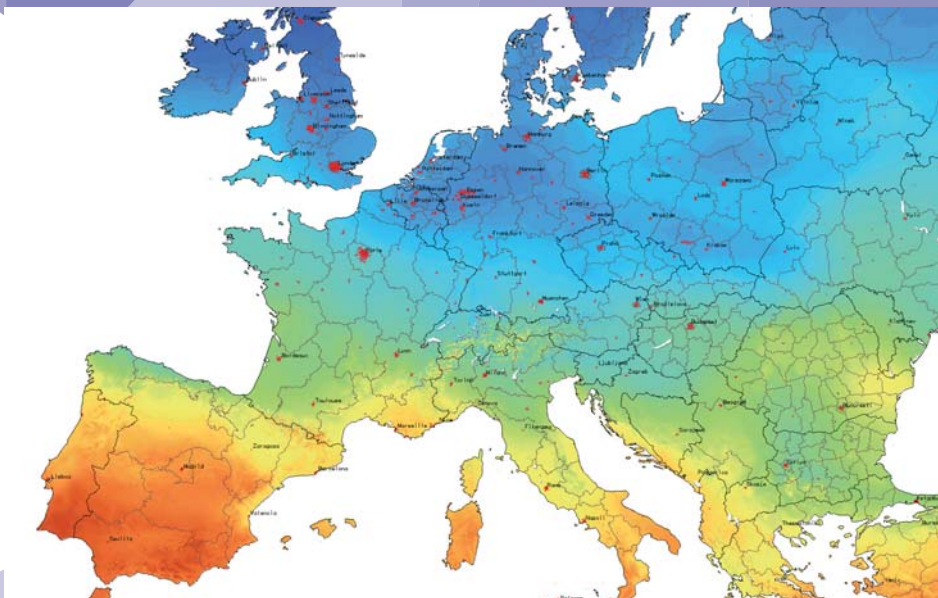
For 1 OBSTA STIF 12V or NAVILITE 12V

OBSTA part number	Number of pannels	Capacity	Autonomy
Solar generator 50 W	1 panel 50 W	60 Ah	7 days
Solar generator 80 W	1 panel 80 W	85 Ah	10 days
Solar generator 125 W	1 panel 125 W	120 Ah	15 days

Other configurations, please consult us

## Size of radar generator depending on localization

for information only



- Blue : Kit area 1
- Green : Kit area 2
- Yellow : Kit area 3

For location or different kind of light, consult us

## OBSTA solar power system

### Complementary characteristics

Operating temperature	-20 to +60°C
Output voltage	12VDC or 24VDC
Weight Dimensions	aluminium support frame stainless bolts and nuts steel
Attachment	2 brackets to fix on pylons, mural or ground fixing
Connection	by connector
Maintenance	annual visit (clean the module)
Batteries used	weatherproof, no maintenance
Photo-voltaic panels	polycrystallins

### Particular precautions

- avoid shadow of surrounding obstacles,
- Direct the solar panel in the south directions (if located in the northern hemisphere),

### Complementary functions

Photocell integrated.

### Other versions

Consult us.



# Accessories

## ACCESSORIES FOR INSTALLATION

*The lighting of obstacles to aircraft is a security element that installation procedures must include. The range of products proposed by OBSTA has been designed for wiring and monitoring a group of obstruction lights.*



### Application

Those boxes have to be installed at the bottom of the obstacles or just near the obstruction lights. Advantages : good resistance to mechanical shocks, resistant to hard climatic environment, protection against electromagnetic fields.

OBSTA monitoring box has been designed for the installation of obstruction lights for aircraft obstacles (building, chimneys, cranes, towers and many more...). They have been designed mainly for low intensity lights as defined in ICAO recommendations and FAA standards.

1/ The junction box P/N 13140 can be used with any OBSTA lights and any voltage (12V, 24V, 48V, 120V and 230VAC). This metallic box does have 4 entries of cable and allows to :

- connect 1 up to 3 lights working simultaneously,
- or connect 2 lights in redundancy,
- connect a photocell,
- send back alarm information.

The junction box P/N 13141 does the same except if it is used in combination with monitoring box.

2/ OBSTA monitoring boxes are installed at the bottom of obstacle and they display :

- if power supply is on
- the status of the lights
- the defect (if there are) of the main lights and the back-up lights.

They also allow to

- send back alarm relay in case of light failure and power failure in option,
- test the photocell,
- test the lights.

OBSTA monitoring boxes P/N 13142, 13143 and 13144 can be used respectively with any OBSTA low intensity 230 VAC, 48VDC and 24VDC. The monitoring box P/N 13147 is used with medium intensity and low intensity only.

3/ The alarm boxes P/N 13145 and 13144 can be used with 1 or 2 OBSTA STI 48V and 24V only.

They allow to send back alarm relay in case of lamp failure.

### Description

This range of products is made in molded and painted aluminum boxes. Entry of cables is made with nickel-plated brass. Inside the box, cable connectors fix all the wires.

This concept allows :

- Easy attachment on vertical panel
- Easy wiring of cables
- Easy junction to external device for the remote monitoring.
- Excellent watertightness of the system (IP65)
- Good resistance to strong climatic conditions
- Operation in strong electromagnetic fields

For monitoring option, luminous display and interrupters are waterproof. They display :

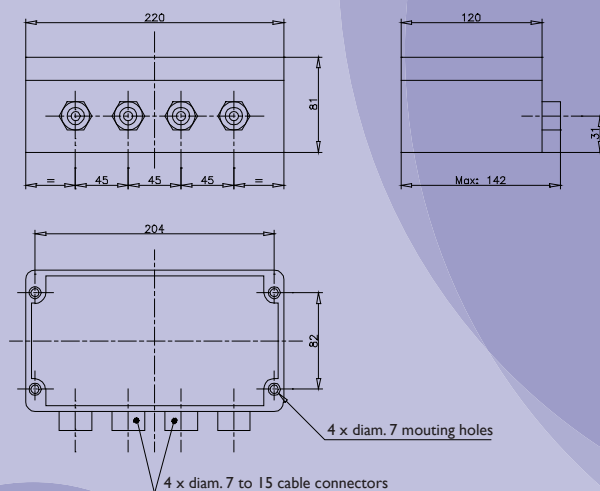
- Power supply on
- The status of the lights
- The defect (if there is) of the main lights or of the back-up lights
- Automatic or manual operation mode



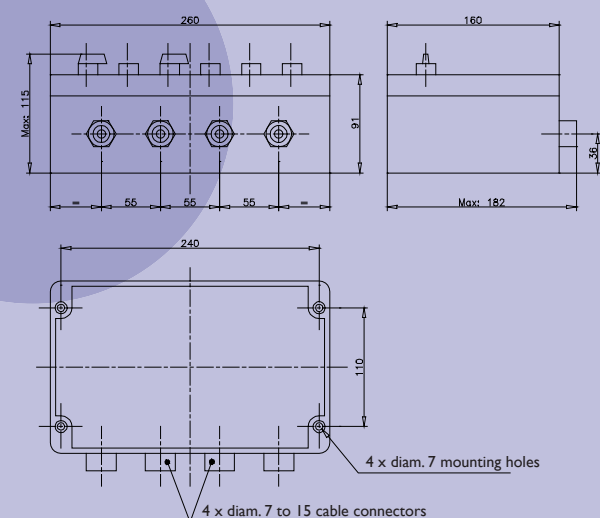
## Complementary Characteristics

### Overall dimensions (in mm)

- Drawing A



- Drawing B



IP degree	65
Cable entries quantity	4
Cable diameter	from 8 to 15 mm
Wire cross section	from 1 to 4 mm <sup>2</sup>
Attachment	by 4 x M5 screws
Weight	drawing A : 1,9 kg drawing B : 2,8 kg

P/Number	Voltage	Drawing	Weight	Photo-cell	Display	Back up	Remote control	Nber of lights
I3140	N/A	A	1,8	yes	no	yes	no	1 to 3
I3141	N/A	A	1,8	Used with I3142, I3143 or I3144				2
I3142	230 VAC	B	2,8	yes	yes	yes	yes	< 7
I3143	48 VDC	B	2,8	yes	yes	yes	yes	< 7
I3144	24 VDC	B	2,8	yes	yes	yes	yes	< 7
I3147	230V / 24V	B	2,8	yes	yes	yes	yes	
I3145	48 VDC	A	1,9	no	no	yes	yes	2
I3146	24 VDC	A	1,9	no	no	yes	yes	2

for exact drawing, please contact us.

# Recommendations for Installation

**Obstruction lights are usually installed in remote location with hard environments for electronic devices. In order to assure reliability and long lifetime in any circumstance, OBSTA has chosen high performance technologies for the lights. Installation procedures must also follow some precautions of installation that depends on the local environments where those lights are installed. Base on our experience, there are 3 major constraints :**

- climatic,
- mechanical,
- electrical.

## Mounting of the lights

The hoisting of the lights is a complex and delicate operation. During the set up operation, the lights must be protected and if possible keep their original packing. The cables must be unrolled carefully to avoid damaging their protection.

The brackets of the lights have to be adapted to resist the constraints of weight. Wind, overloads due to snow or white frost have also to be considered. Some obstacles generate important vibrations that brackets may have to damp, or at least not to amplify them by resonance phenomena.

Junction boxes must be located so that entries of cables must always be on the lower face in order to avoid water penetrations. For installation with RFI risk or under electromagnetic fields, it is necessary to avoid making loop of cable.

Some of the lights do have very precise optics and it is important to install them perfectly on a horizontal base.

The choice of cable has to be adapted to climatic environment : UV, temperature and humidity.

When installed on a chimney, ambient temperature may be very high. The lights should be installed at a certain distance of it. The temperature should be lower than 55°C or 60°C as defined in the datasheets of the lights.

## Power Supply

For the cable, the section of the wires must be adapted to the number of lights, the voltage, the power consumption and the total length.

The obstacles can be source of electromagnetic fields. This is the case of broadcasting towers (TV, FM, GSM, etc...) but also on all kinds of high obstacles by induction from lightning strike, industrial transients coming from disturbances caused by switching and commutating of electrical motors or discharge lighting. The operation of such devices can cause abrupt shifts in the ground potential that can generate a current flow through the power cables in order to equalize the ground potential.

Electrostatic discharge (ESD) is another form of electrical surge that can be included in this group. For all those cases, we recommend to use shielded cables for power supply and alarms. The shield has to be connected to the ground the nearest possible to the lights. This shielding cannot in no case be ensured by armored cable which is ineffective to filter high frequencies.

The protection against over currency is only necessary for the protection of the cables, the lights do have already their own protections.

## First run of the installation

When switched on for the first time, it is strictly recommended not to test the circuit with high voltage generating tester. Before switching on, make sure that the line voltage is within the prescribed tolerances of the lights.

Some lights are very powerful and contain some ultraviolet radiation.

Do not look directly at them without eye protection.

## Maintenance

For all kind of lights, it is recommended to do a yearly visit to check wiring connection and corrosion of the materials. To ensure optimum performance and reliability of your OBSTA system, it is strongly advised that only components and modules manufactured by OBSTA be used.

## Protection of installation against lightning risks

Obstruction lights are very often installed in very constraining EMI environments. OBSTA lights are designed to resist to these constraints. However, installation procedures are also essential to obtain a optimal lifetime of the all installation. It can also be necessary to install surge and lightning voltage protector against lightning risks.

The range of lightning surge protectors which we propose offer an efficient protection of the power supplies against lightning strikes and industrial transient overvoltages.

These lightning protectors are available for DC power supplies 24V or 48V and for AC power supplies 110VAC up to 240VAC, single or 3-phase. They come either in DIN rail or in complete panels ready to be to install.

Several configurations are possible according to the voltage, the power supply sensitivity and can include alarm signal, as an option. Contact us and we will help you to optimize protection of your installation.



AC surge protector  
Type I



DC power supply surge  
protector



AC surge protector panel

# EXAMPLES OF INSTALLATION



**Hong Kong 2005**



**Kenya (G3M)**



**Koweit**



**Venezuela**



**Tour Eiffel (France)**



**Pylone pyrénées**



**Viaduc de Millau (France)**



**Washington**



**Oman**



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