O-MAN-00003-NAV

USER MANUAL

Low intensity beacon with Infrared

NAVILITE-IR-FAA-120-240V // 113969IR

NAVILITE-IR-F-048V // 113965IR

www.obsta.com

1. Product name and part number

Description	Norm	Part number (P/N)	Power supply	QR code
NAVILITE-IR-FAA-120-240V	Low intensity ICAO type A, B and E FAA L-810, *ETL certified*	113969IR	110-240 Vac	
NAVILITE-IR-FAA-120-240V (F)	Low intensity ICAO type A, B and E FAA L-810(F) *ETL certified*	113969IR-F	110-240 Vac	
NAVILITE-IR-F-048	Low intensity ICAO type A, B and E FAA L-810	113965IR	48 Vdc	

***Remark:* NAVILITE-IR-FAA-120-240V (P/N 113969IR) and NAVILITE-IR-FAA-120-240V (F) (P/N 113969IR-F) are strictly the same but differ only by the setting of the dipswitches.**

2. Caution

- Do not proceed with any maintenance job when the product is under operation.
- Power supply must be shut down when opening the flash-head or the cabinet.
- Installation must be performed only by an electrically skilled operator and National electrical installation rules must be respected.
- Always wear appropriate Personal Protective Equipment (PPE) when installing, maintaining or servicing the system.
- Any installation or maintenance operation performed at height must be carried out in strict compliance with fall-protection procedures.
- Do not look directly at the projector while it is in operation: Led projectors produce brilliant flashes of lights which can result in temporary or permanent eye damage.
- OBSTA products may be affected by ESD, use state of the art precaution before manipulation.
- Unless otherwise specified, all cables must be shielded, and the shielding must be connected to ground.
- All cables connected to PCBs and terminal blocks must be equipped with a cable connector to prevent false contacts when connecting devices.

3. Warranty

OBSTA warrants the equipment described in the instruction manual and sold to purchasers to be free from defects in material and workmanship at the time of shipment. OBSTA's liability under this warranty being limited to repairing or replacing, at OBSTA's option, items which are returned to it prepaid within twenty-four (24) months from shipment to the original Purchaser, or twelve months from commissioning, and found, to OBSTA's satisfaction, to have been defective. In no event shall OBSTA be liable for consequential damages. NO PRODUCT IS WARRANTED AS BEING FIT FOR A PARTICULAR PURPOSE AND THERE IS NO WARRANTY OF MERCHANTABILITY.

This warranty applies only if: (I) the items are used solely under the operating conditions and in the manner recommended in OBSTA's instruction manual, specifications, or other literature; (II) the items have not been misused or abused in any manner or repairs attempted thereon; (III) written notice of the failure within the warranty period is forwarded to OBSTA and the directions received for properly identifying items returned under warranty are followed; and (IV) such return notice authorizes OBSTA to examine and disassemble returned products to the extent OBSTA deems necessary to ascertain the cause of failure. The warranties stated herein are exclusive.

THERE ARE NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, BEYOND THOSE SET FORTH HEREIN, and OBSTA does not assume, nor does OBSTA authorize anyone else to assume for it, any other obligation or liability in connection with the sale or use of said products. OBSTA's liability on any claim of any kind, including negligence, for loss or damages arising out of or connected with the manufacture, sale, delivery, repair or use of any equipment or services provided by OBSTA shall in no case exceed the price allocable to the item or service or part thereof which gives rise to the claim.

The integrity and reliability of OBSTA aviation obstruction lighting systems is dependent on the use of OBSTA parts and components. To ensure the optimum performance and reliability of your OBSTA system, it is strongly advised that only components and modules manufactured by OBSTA be used.

4. Introduction

4.1. General information

This manual provides information about the installation, operation, and maintenance of the NAVILITE FAA Intensity Obstruction Lighting Systems manufactured by OBSTA. The lighting systems described in this manual are the 113969IR, 113969IR-F low Intensity type A, B, E (ICAO) and FAA type L-810(L)(F) obstruction lights and the 113965IR, low intensity type A, B and E (ICAO).

4.2. Description

The NAVILITE FAA is an LED low intensity system manufactured to comply with ICAO annex 14 chapter 6 and Federal Aviation Administration Advisory Circular 150/5345-43J.

- ICAO low intensity type A, B or E with IR depending on internal switches positions.
- L-810(L) type red fixed with IR emissions (P/N 113969IR)
- L-810(L)(F) type flashing red and infrared emissions (P/N 113969IR-F)

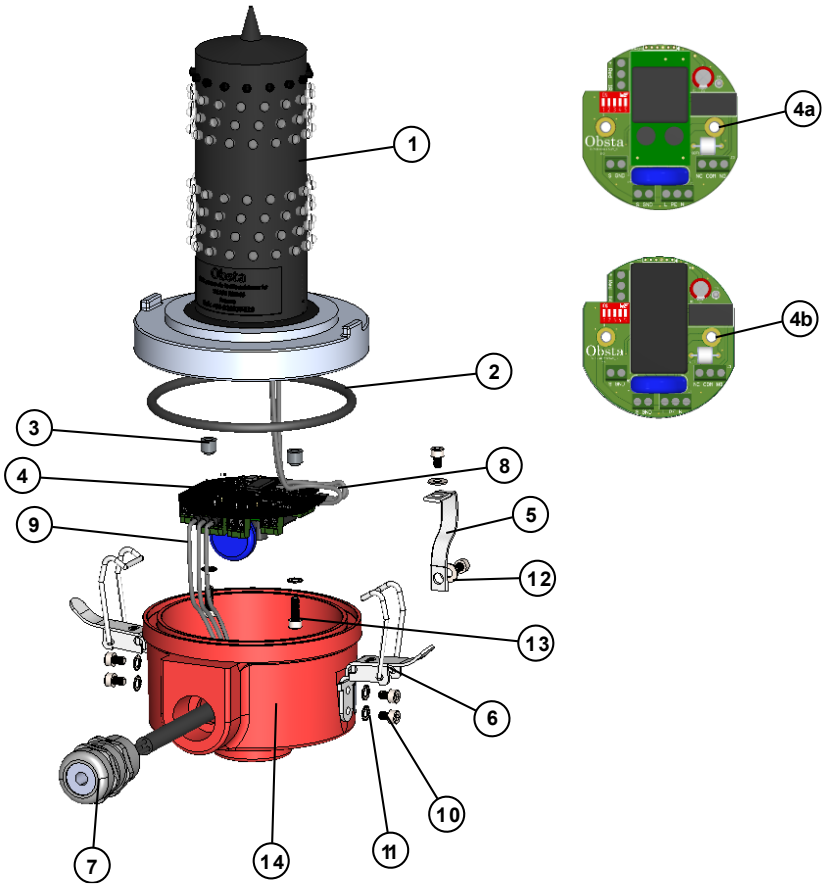
L-810(L) type red fixed with IR emissions (or L-810(L)(F) mimic with L-864 medium intensity) depending on internal switches positions (113969IR and 113969IR-F are identical hardware-wise)).

The NAVILITE includes:

- A lamp molded with 8 level of leds, 7 reds led, and 1 IR led.
- A base with 2 x ¾" NPT threaded holes for mounting.
- A NPT ¾" plug (if one of the two threaded holes is not used.
- Intern PCB with switch (different configuration), Surge protection and alarm.
- A monobloc design with no loose part during installation

4.3. Beacon

4.3.1. Bill of materials



N°	Designation	Spare part (if available)	Qty
1	Navilite FAA IR (lamp)	113960IR	1
2	O-ring Ø99x 5 80sh		1
3	Spacer		2
4	PCB Navilite		1
4a	PCB Navilite 113965IR	113962IR	
4b	PCB Navilite 113969IR (-F)	113961IR	
5	Fall arrest cable		1
6	Toggle mechanism		2
7	¾" Cable gland		1
8	Internal wiring Navilite / PCB		4
9	Wiring PCB / Power supply		2
10	BHC M4x6 screw		6
11	AZ M4 washer		6
12	M4 washer		2
13	CHC M4x12 screw		2
14	Base		1

5. Operation

5.1. System components

- One-piece molded:
  - Light perfectly waterproof
  - No corrosion risk
  - No losing parts
  - Bird spike
- Flash-head:
  - Total 128 leds
  - 16 circuits of 4 leds with infrared
  - Led wiring 4 by 4 in active redundancy at 90°
  - Provide perfect support for the led inclination angle
- Power supply
  - Modular design with separate power supply in aluminum housing mounted
- Surge protection included
- Mimic with L-864 medium intensity (flashing mode) on fixed mode
- 2 x ¾" NPT threaded holes for mounting (or with stainless bracket P/N: 113928 and standard cable entry in absence of FAA rigid conduit)

5.2. Synchronisation

- Master / slave mode (one master light can be synchronized with other slave lights), only for l-810(L)(F).

5.3. Alarm relay

The lamp is in default when it detects one of the following defects:

- No power supply or power supply failure
- Visible or IR failure: Overconsumption or underconsumption (overcurrent or undercurrent) of the 12V Red LED circuit and/or the 12V Infrared (IR) circuit.
- No synchronization signal received in flash mode

Upon a lamp failure (default condition), the D5 fault LED on the electronic board lights up and plays a specific sequence at the default, and the alarm relay switches to its normally closed (NC) or de-energized state (rest position).

To reset the alarm: switch off, then switch on again after 1 minute.

6. Installation

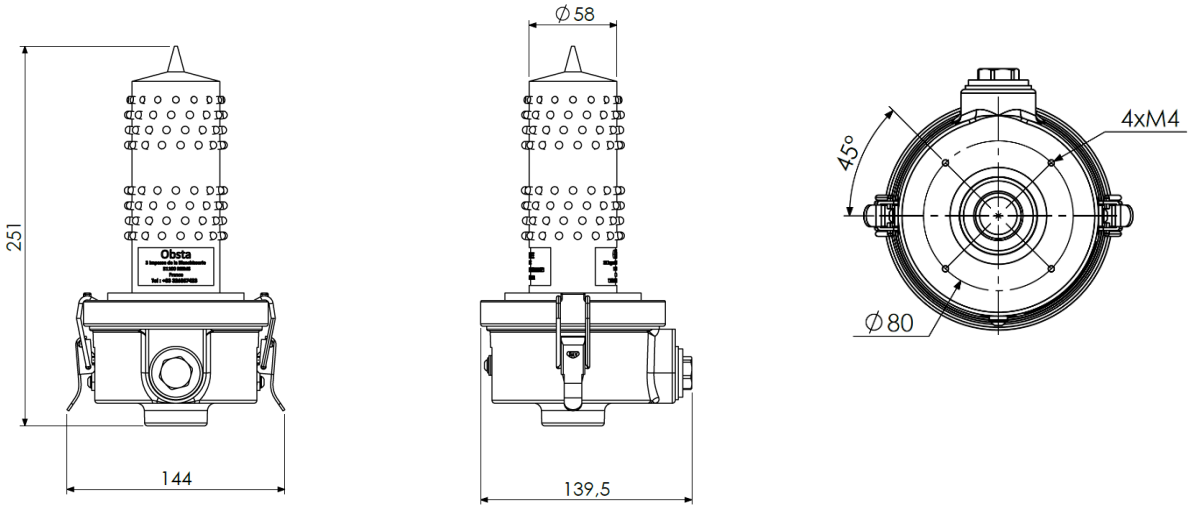
6.1. Unpacking

Carefully unpack the product and remove any internal packing material. Examine each item for obvious physical damage. Immediately report any claims to the carrier.

It's strongly recommended to supply the product and verify that it's working properly at ground level before final installation.

6.2. Mounting

6.2.1. Dimensions



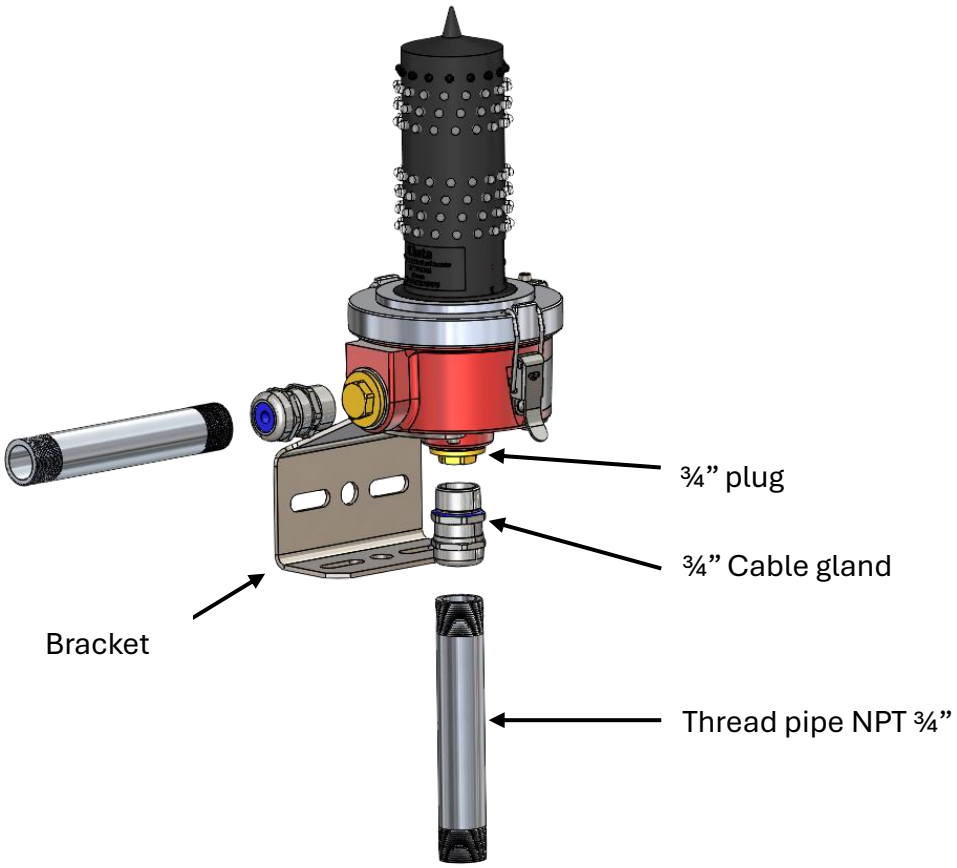
6.2.2. Safety instruction

- **If the NAVILITE lamp is installed on a chimney**, it must be positioned below the smoke exhaust outlet in order to avoid any loss of luminosity.
- **The ambient temperature** around the NAVILITE must not exceed 55 °C, otherwise the converter may be damaged.
- **The operation and lifetime** of the lamp may be affected by the proximity of high-power electromagnetic emitters (omnidirectional antennas, radiating masts, etc.).
- **In environments** disturbed by electromagnetic radiation, the power cable must be shielded and the shielding properly connected to ground.
- **The light assembly fixture** must be mounted perfectly horizontally to meet the optical specification required for Aircraft Obstruction lights. If mounted in another position, the fixture will not be considered as an Aircraft Obstruction lights.

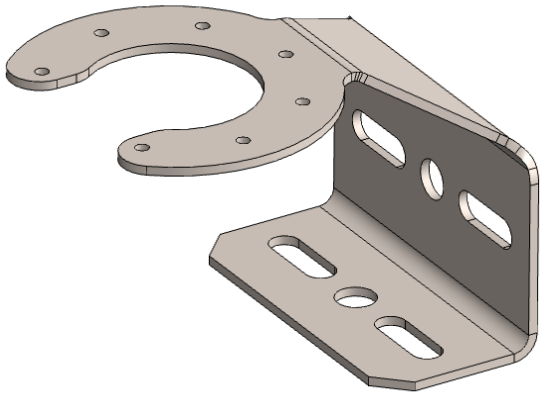
6.2.3. Mounting option

Various mounting options are available: on a ¾" NPT pipe, on an OBSTA bracket (ref. 113928) or on u-bolt brackets with a diameter between 50 and 273 mm.

Tube ¾" NPT:



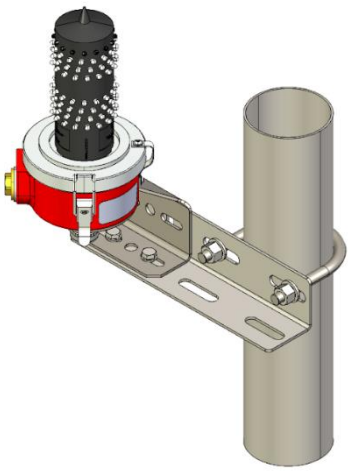
OBSTA bracket (P/N: 113928)

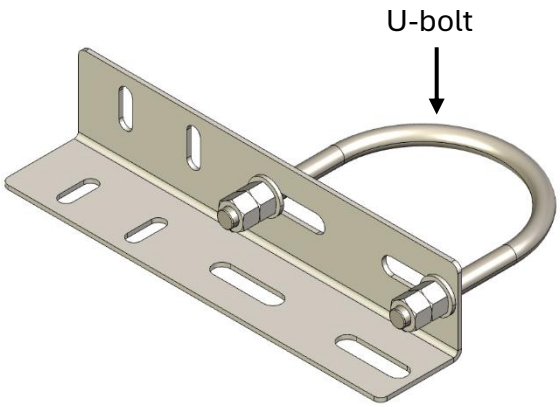


Square and U-bolt (P/N-113789-NAV-XXX*)

The size of the U-bolt depends on the size of the tubular bracket:

- DN40: 1”1/2 - 48,3 mm tube *P/N [113789-NAV-48]*
- DN50: 2” - 60.3 mm tube *P/N [113789-NAV-60]*
- DN65: 2”1/2 - 76.1 mm tube *P/N [113789-NAV-76]*
- DN80: 3” - 88.9 mm tube *P/N [113789-NAV-89]*
- DN100: 4” - 114.3 mm tube *P/N [113789-NAV-114]*
- DN150: 6” - 168.3 mm tube *P/N [113789-NAV-168]*
- DN175: 7” - 193.7mm tube *P/N [113789-NAV-194]*
- DN225: 9” - 244 mm tube *P/N [113789-NAV-244]*
- DN250: 10” - 273 mm tube *P/N [113789-NAV-273]*





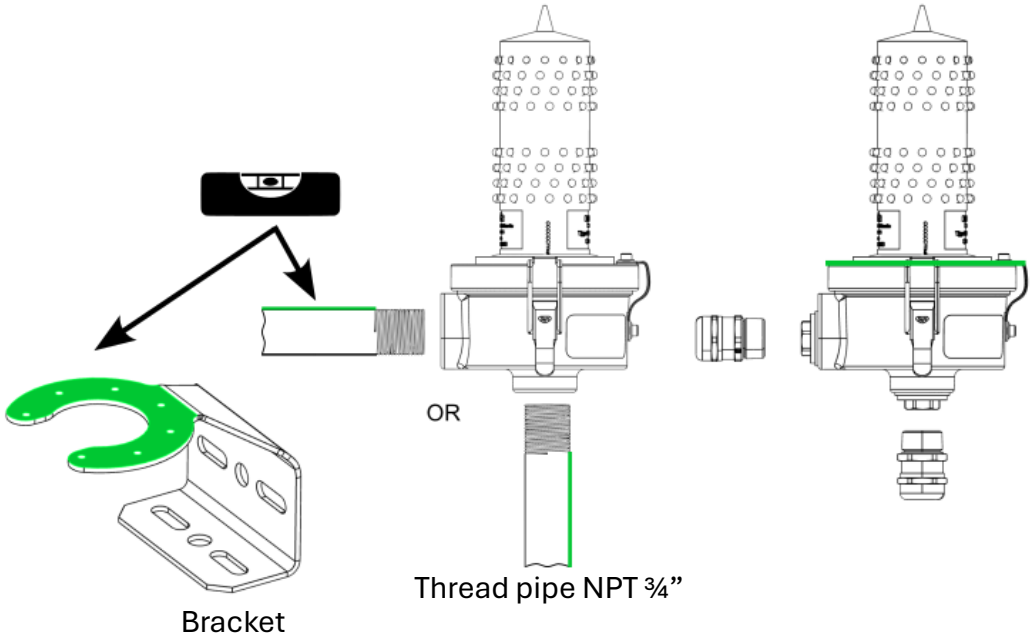
6.2.4. Leveling

Leveling of the light is the explicit responsibility of the installation. Installer must use a spirit level.

- ¾" NPT pipe mounting leveling must be performed on the tube either horizontally or vertically.
- 4 M4 holes: leveling must be performed on the bottom of the light

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

To level the lamp, the spirit level must be placed on the green areas as shown below:

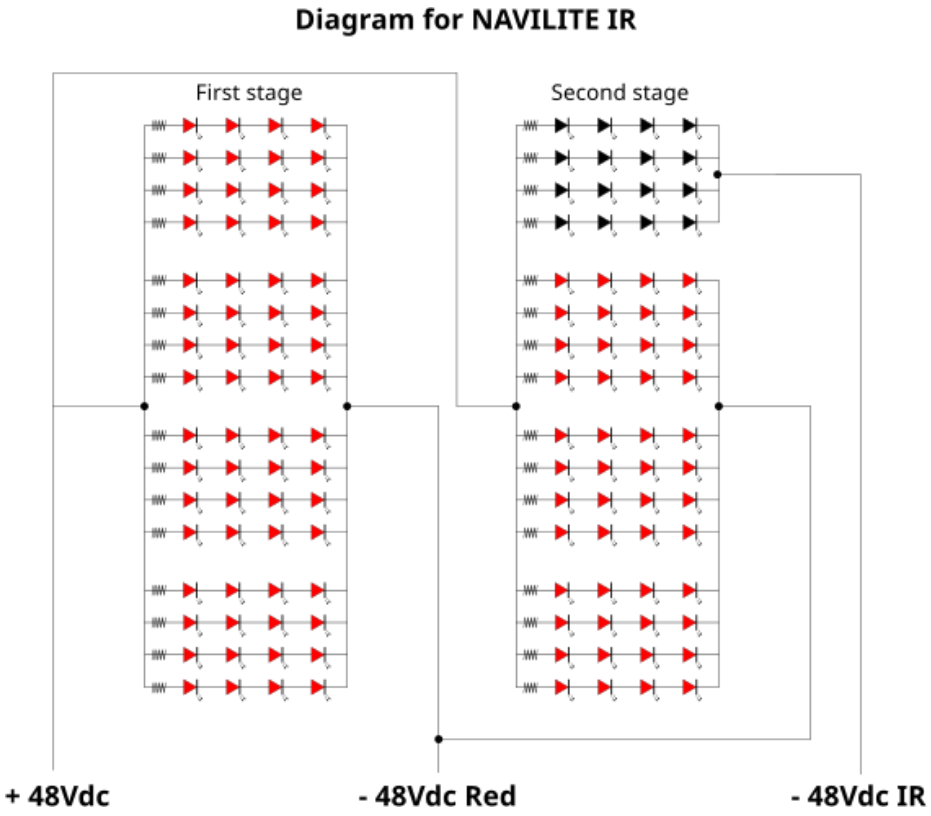


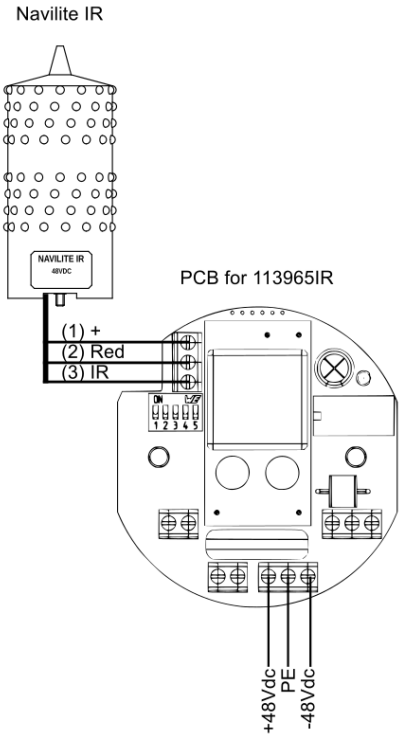
7. Wiring

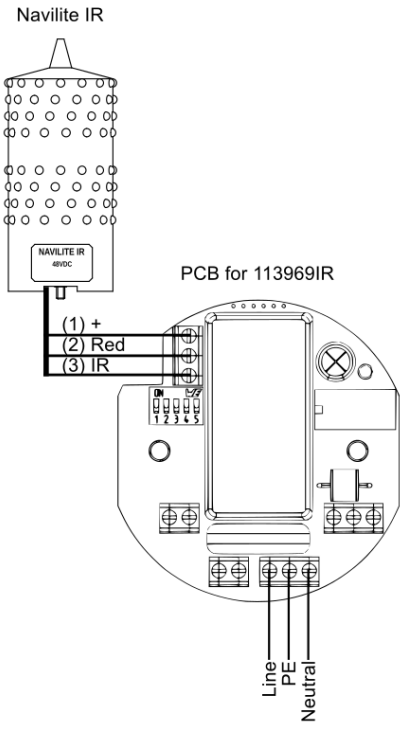
7.1. Caution before wiring

- **Power OFF**: Always ensure the main power supply is completely turned off before starting any wiring work.
- **Verify voltage**: Confirm the voltage level of the circuit. Be aware of high-voltage hazards.
- **Use proper PPE**: Wear personal protective equipment (insulated gloves, safety glasses and safety shoes).
- **Secure the work area**: Ensure the aera below is cordoned off to prevent injury from falling tools or components.
- **Chek equipment ratings**: Confirm the product's voltage and current ratings match the installation circuit.
- **Inspect components**: Examine all parts (wires, connectors, terminals) for damage before wiring.
- **Proper tools**: Use insulated tools appropriate for electrical work.
- **Follow wiring diagram**: Refer to the OBSAT's schematic to ensure correct connections.
- **Grounding**: verify proper grounding/earthing for all metal parts and enclosures.
- **Secure wiring**: Fasten cable properly to prevent strain, chafing, or accidental disconnection.
- **Verify before powering**: Double check all connections before restoring power.
- **Shielded cable**: Cables must be shielded when used in electromagnetic fields.
- **Position**: The lamps shall be installed as close as possible from the command box from it using a 2x1.5mm^2 cable.
- **Polarities**: The polarities must be correctly positioned on the DC power supply. If reversed, the printed circuit board may be seriously damaged.
- **Configuration:** Do not forget to set the dipswitches as required by the warning lights: Unless specified, dipswitch settings configurations are factory preset.

7.2. Overview



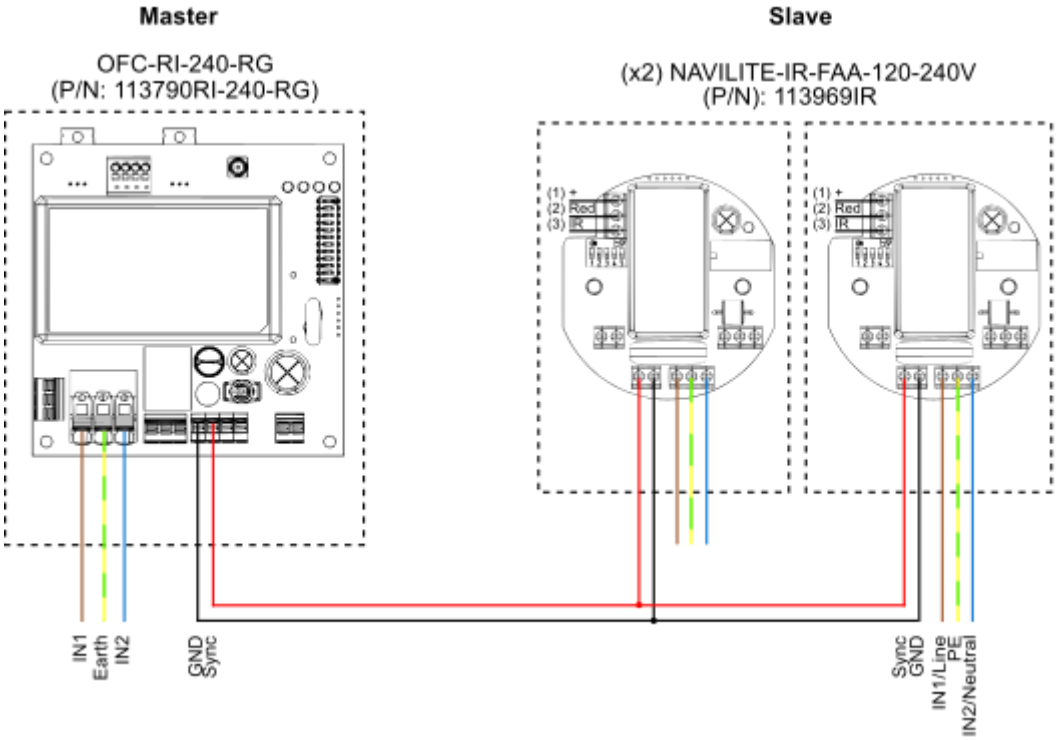


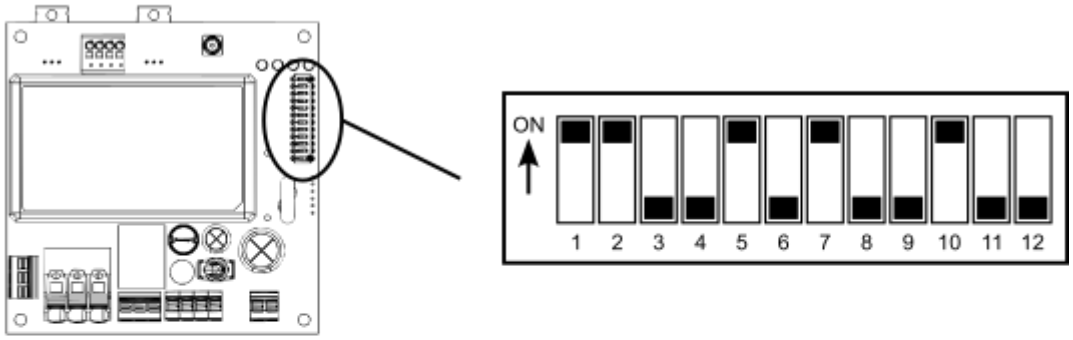


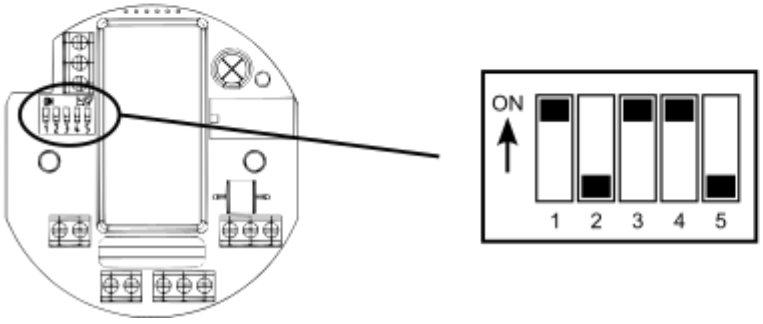
7.3. Typical wiring

The following typical wiring are provided for illustrative purposes only.

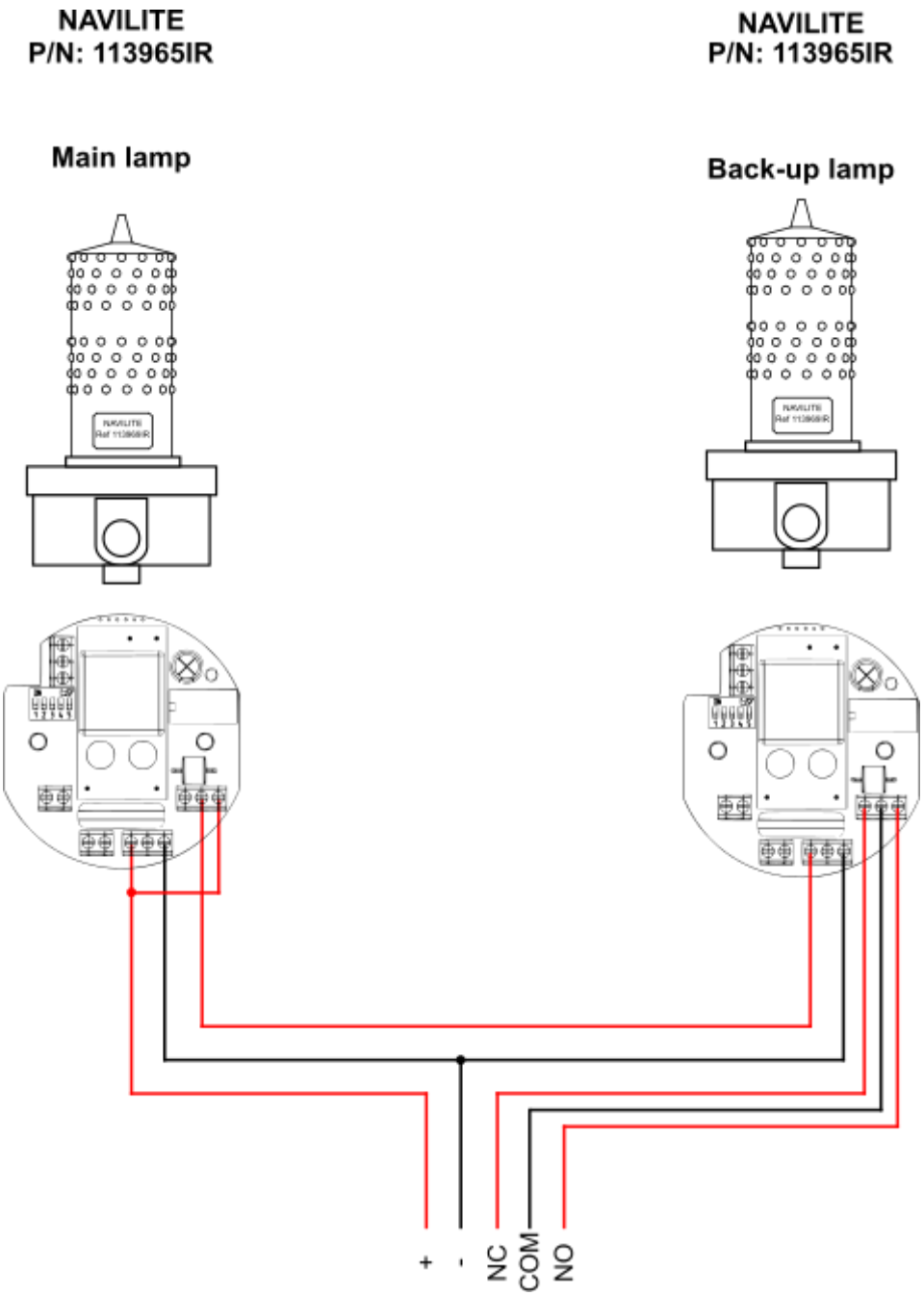
OFC L-864 P/N 113790RI-XX MIMIC with 2 NAVILITE L-810 (F) P/N 113969IR



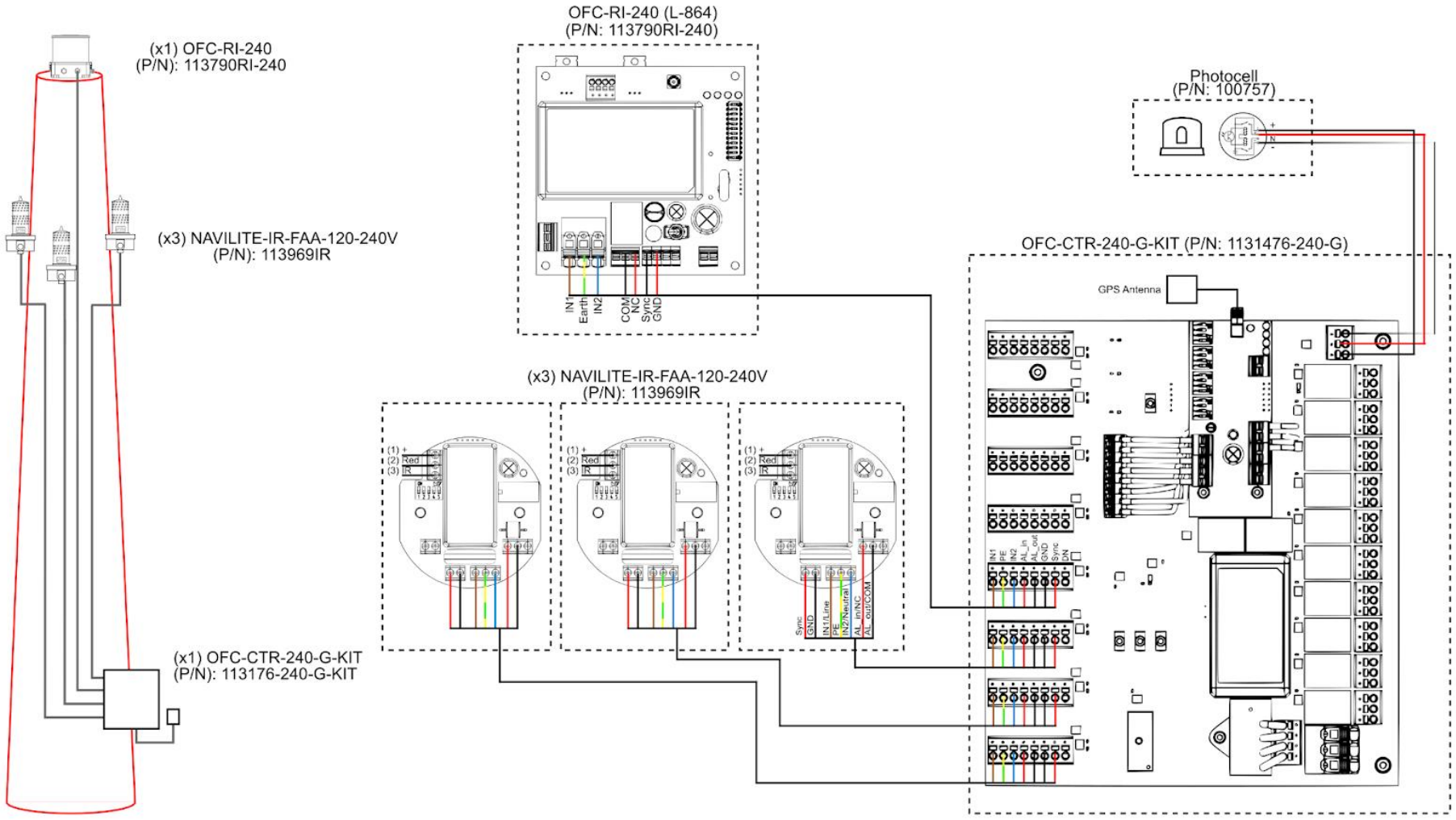




NAVILITE (P/N: 113965IR) in “Main and Back-up” configuration:



FAA type A1



8. Startup and configuration

8.1. Power-up

Before turning on the power, ensure that all electrical connections are properly made and that the supply voltage matches the product specifications. Check that the wiring is secure and that there are no bare wires or conductive elements that could cause a short circuit.

8.2. Configuration

8.2.1. Switch configuration

The setting of the light is done through the switch on the command card

N°	1	2	3	4	5
ON	Nominal	Master	Duration	Duration	Duration
OFF	Reset	Slave	Duration	Duration	Duration

Switch number			Flash time
3	4	5	
OFF	**OFF**	**OFF**	100 ms
OFF	**OFF**	**ON**	125 ms
OFF	**ON**	**OFF**	150 ms
OFF	**ON**	**ON**	175 ms
ON	**OFF**	**OFF**	200 ms
ON	**OFF**	**ON**	225 ms
ON	**ON**	**OFF**	250 ms
ON	**ON**	**ON**	Continuous

8.2.2. Reset mode

Dipswitch N°1 “OFF”, the program is on reset mode:

- Previous default conditions are cleared
- The lamp turns off
- Alarm is engaged
- The error indicator (Red led on PCB) is lit

8.2.3. Master mode

Dipswitch N°1 is ON (Nominal) and N°2 is ON (Master), the program switches to master and nominal mode. In this mode, except in the event of an issue:

- Alarm is disengaged and the error led is off.
- The lamp turns on, according to the selected sequence by switch N°3.4 and5.
- If the light does not flash continuously, a 12 Vdc edge lasting 100ms is output at the SYNC_OUT output, starting at the same time as the flash.

Remark: *When there is no alarm, the connection is established between COM and NC; when it is, a connection is established between COM and NO. The alarm is engaged to signal default.*

8.2.4. Slave mode

Dipswitch N°1 is ON (Nominal) and N°2 is OFF (Slave), the program switches to slave mode. In this mode, if there is a synchronization default, if the sequence selected is not a continuous flash and no other issues:

- The lamp flashes at 15FPM of 200ms.
- If at least a 2ms signal is detected on the “SYNC_IN” input (12Vdc or higher or from another lamp), the synchronization default is cleared.

If no defaults are detected or if the sequence is a continuous flash:

- The alarm is disengaged.
- The connected lamps light up.
    - Continuously if the selected sequence is a continuous flash.
    - Otherwise, whenever an incoming signal is detected on “SYNC_IN” channel with a duration selected via the flash duration dipswitches.
    - This edge will be ignored if it occurs again while a flash is in progress and until 200ms after this flash.

8.3. Default

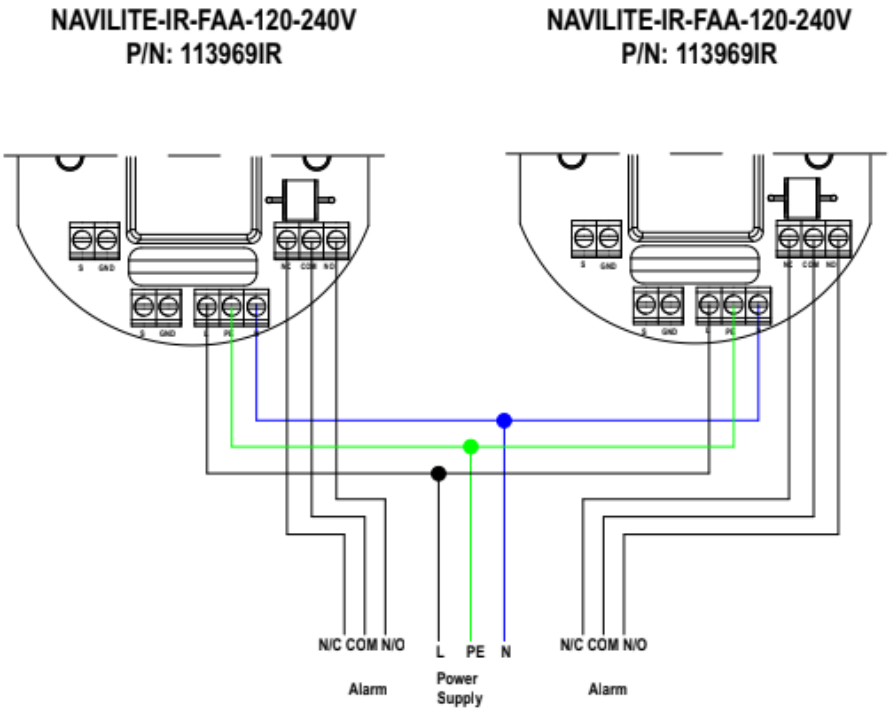
The light manages default condition (short-circuit, LED failure, etc...), resulting in certain warning behaviours and also affecting its main funtion (flashes). Fault conditions are tested regularly and can be automatically cleared once the situatoin disappears. Except for lamp dyfunction default, the status is retained until the reset of the product.

Description	Condition of default	Led pattern
Power supply	Under or overvoltage	. . . . . Short blinking
Lamp dysfunction	Lamp 25% intensity loss	Signal is identical to the light head sequence
Slave synchronization	The light is in slave mode; the sequence of the active channel is not a continuous flash and the master light signal expected on “SYNC_IN” unput has not been received within 10 seconds.	— . 1 long and 1 short

The relay switches off when one or more of these defaults are present.

When several defaults are present at the same time, the led displays the most important one.

To reset the alarm: switch off, then switch on again after 1 minute.



9. Maintenance

9.1. Annual visit

Test	Frequency	Preventive action	Risk
Wiring	Annual	Visual control Tightening cable glands Tightening PCB wires	Cable degradation Poor contact Lamp in default mode
Waterproof	Annual	Lamp visual verification	Water infiltration Short circuit Lamp off
Light performance	Annual	Verification of external Clean beacon Check lamp default	Poor brightness Lamp in default mode
Clamping	Annual	Checking tightness	Lamp falling Tightness degradation
Aspect (rust, dust…)	Annual	Exterior cleaning Check if resin bleaches over time	Malfunction

Before opening the lamp and carrying out any work, check that there is no current in the lamp.

9.2. Spare part

- PCBa for P/N: 113965IR [**113962IR**]
- PCBa for P/N:113969IR [**113961IR**]
- Flash head (P/N:113965IR and P/N:113969IR) [**113960IR**]

10. Technical specifications

10.1. Light output

Designation	Min	Nominal	Max	Unit
IR luminosity	4	-	-	mW/sr
Red luminosity	32.5	-	-	Cd
IR beam spread	-	>10	-	°
Red beam spread	-	>10	-	°
Beam pattern	-	360	-	°
Flash mode (L-810(L)(F))	100	-	250	Flash duration (ms)
Fixed mode (L-810(L))	-	Continuous	-	Flash duration

10.2. Electrical input

Designation	Min	Nominal	Max	Unit
Voltage (113965IR)	25	48	60	Vdc
Voltage (113969IR (-F))	99	110-240	264	Vac
Voltage synchro input	12	-	60	Vdc
Top synchro duration	2	-	100	ms
Alarm relay	-	-	1	A

10.3. Mechanical properties

Weight	1.150 Kg
Size	154 x 128.5 x 251 mm
Attachment	¾ NPT X4 M4 screw

10.4. Operating environment

Name	Min	Nominal	Max	Unit
Wind load	-	-	320	Km/h
Humidity	5	-	95	%
Operating temperature	-40	20	+55	°C