O-MAN-00008-NAV

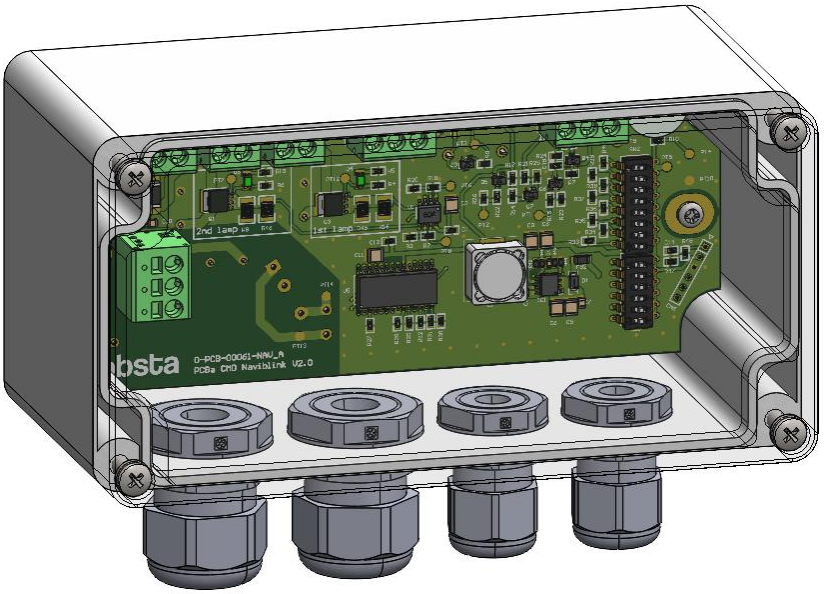
USER MANUAL

Control box for low-intensity NAVILITE 48V lights

48V-NAV-CMD-120/240 // 113912

NAV-CMD-48-B // 113915

NAV-CMD-SOL // 113915-SOL



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1. Product name and part number

Description	Part number (P/N)	Power supply	QR code
NAV-CMD-SOL	113915-SOL	12 - 24 Vdc	
NAV-CMD-48-B	113915	48 Vdc	
48V-NAV-CMD-120/240	113912	110 - 240 Vac	

1.1. Version information

Note regarding previous versions (prior to 2026): *This chapter details the characteristics of previous generation models and any specific technical features they may have.*

Previous versions are completely identical to the current version in the following respects:

- Wiring diagrams: Terminal assignments and inputs/outputs are the same.
- Software configuration: The settings and commissioning parameters remain unchanged.
- Performance: The electrical and functional characteristics are equivalent.

The only change concerns the conductor connection technology.

- Current version: Quick-connect terminals (spring technology).
- Previous version: Mechanical connection terminals (screw technology).

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 and maintenance of the command box dedicated to low-intensity NAVILITE 48V lights without built-in controller reference 113900, 113905, 113965 (red only) and 113905IR/113965RICH (red and infrared).

Note regarding the configuration of combined lights (Red + Infrared):

For beacons combining 48Vdc red and infrared (IR) circuits (such as NAVILITE part number 113905IR), the hardware configuration depends on local civil aviation regulatory requirements:

- Standard mode (coupled circuits): Used in most countries (ex: FAA (USA), Nordic countries). The red and infrared modules operate simultaneously (steady or flashing) and are connected in parallel to the same terminals ("1st" and/or "2nd").
- Decoupled mode (local requirements, ex: Switzerland): Required when regulations mandate distinct behavior for each circuit (e.g., flashing infrared and steady red). The circuits are then separated and wired independently on distinct channels of the housing.

4.2. Description

- Polycarbonate envelope with transparent cover.
- 2 entries for cables from 5 to 10 mm and 2 for cables from 7 to 13 mm in diameter.
- One photoresistor is integrated for night only operation, if necessary.
- Surge protection included.
- 1 terminal connection for the incoming power supply (1 dedicated to 48Vdc and 1 dedicated to 12/24 Vdc and 230Vac).
- 2 terminal connections "1st" and "2nd". Each terminal allows the connection of 1 or 2 NAVILITE 48 VDC red lamps, wired in parallel. It is possible to use only one of the two terminals, or both simultaneously, depending on the desired configuration. For red and infrared lamps, a maximum of 1 lamp per terminal block can be connected.
- 1 terminal connection for the outgoing alarm (normally open (NO) and normally closed (NC) are both available). This feature allows remote monitoring of the card status in the event of a default.
- 2 dipswitches (SW1 and SW2) to:
    - Enable or disable the photoresistor
    - To set the number of NAVILITE units in operation
    - Configure all operating modes (fixed mode, flashing mode, simultaneous mode, main and backup mode, reset).

4.3. Operation

This command box is designed to command NAVILITE 48Vdc lamps, which operate either at night only or day and night.

Using the dipswitches, the operator can set different operating modes:

- **“Main and backup”**: Two lamps operate in active redundancy. The main lamp, connected to the “1st” terminal block, always remains on. The backup lamp, connected to the “2nd” terminal block, remains off and only turns on in the event of a failure of the main lamp.
- **“Simultaneous”**: 1, 2, 3, or 4 lamps operating simultaneously. The control box can be connected to 1 to 4 red lamps (113900, 113905, or 113965) on “1st” and/or “2nd” (max. 2 lamps in parallel on each terminal block). In the case of red and infrared lamps, you can connect 1 or 2 lamps in simultaneous mode (maximum 1 lamp per terminal block).
- **“Day and night”** or **“Night only”**: The command box can control the day/night switching of the lamps. Continuous operation or night-only operation, controlled by the internal photoelectric sensor.
- **“Flash frequence”** and **“Flash duration”**: Use the 2 dipswitches to set the operation of the lamps: fixed mode (low intensity types A and B) or flashing mode (low intensity type E), night only or permanent, redundancy or simultaneous.

The command box incorporates default management based on current detection. Leds indicate the status of the lamps connected to the board in real time.

Normal operation, the Green led (D4) for “1st” and/or (D6) for “2nd” light up.

The command box detects a default, the Red led (D2) light up if:

- Over current or low current depending on the number of lamps set up in the dipswitches
- Lamp failure
- Power supply issues
- In a “**Main and Backup”** configuration, the card automatically switches from the main lamp to the backup lamp in the event of a main lamp failure. This action triggers the card's fault LED to light up to signal the incident.

4.4. Compatibility

The command box NAV-CMD-SOL, NAV-CMD-48-B and 48V-NAV-CMD-120/240, are compatible with 48Vdc NAVILITE lamp:

Red only light:

- *NAVILITE-48V* (P/N)113900
- *NAVILITE-48V-CABLE* (P/N)113905
- *NAVILITE-F-48V* (P/N)113965

Red + Infrared (IR) combi light:

- *NAVILITE-IR-48V-CABLE* (P/N)113905IR
- *NAVILITE-IR-NPT-48V* (P/N) 113965IRCH

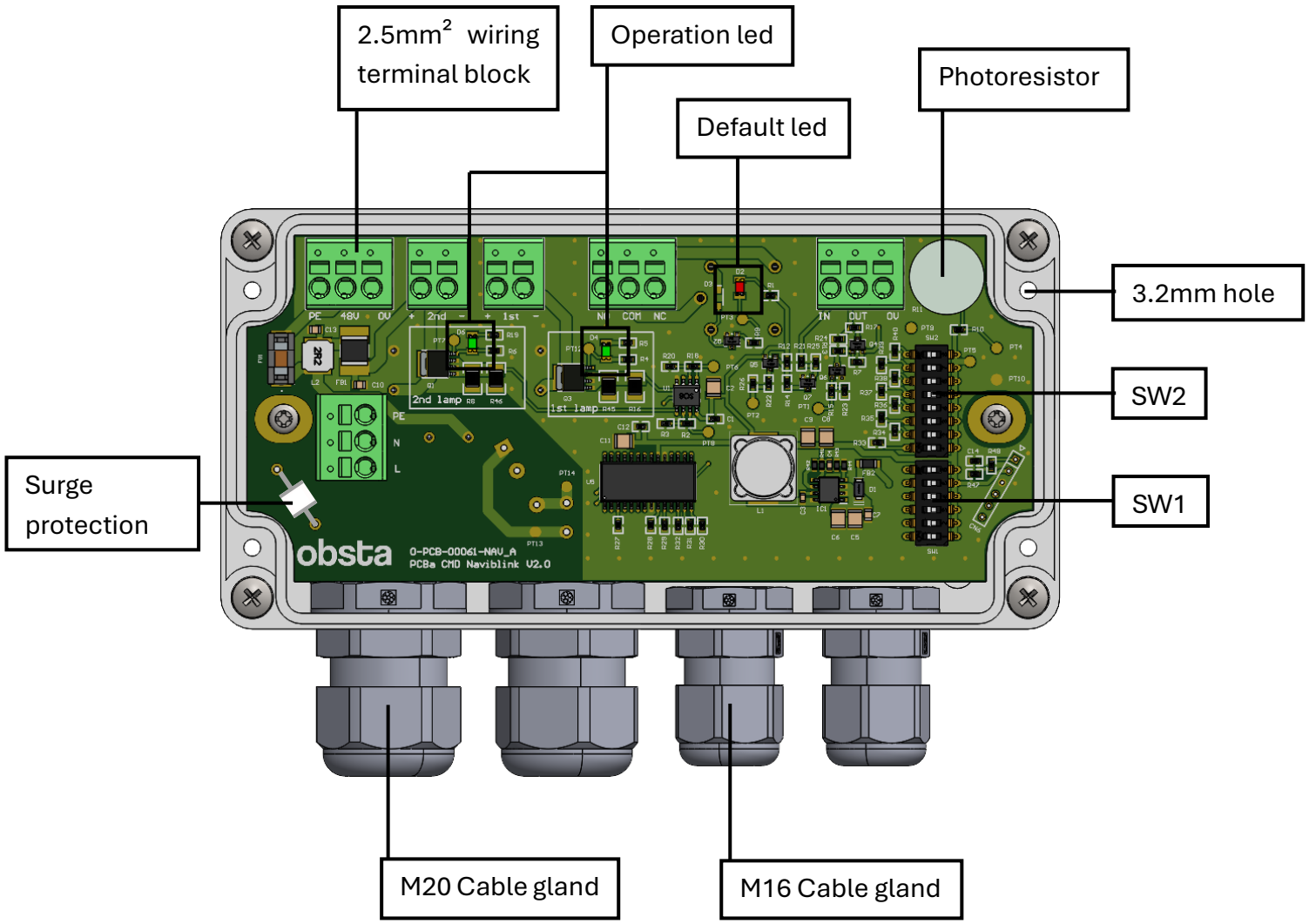
5. Installation

5.1. Unpacking

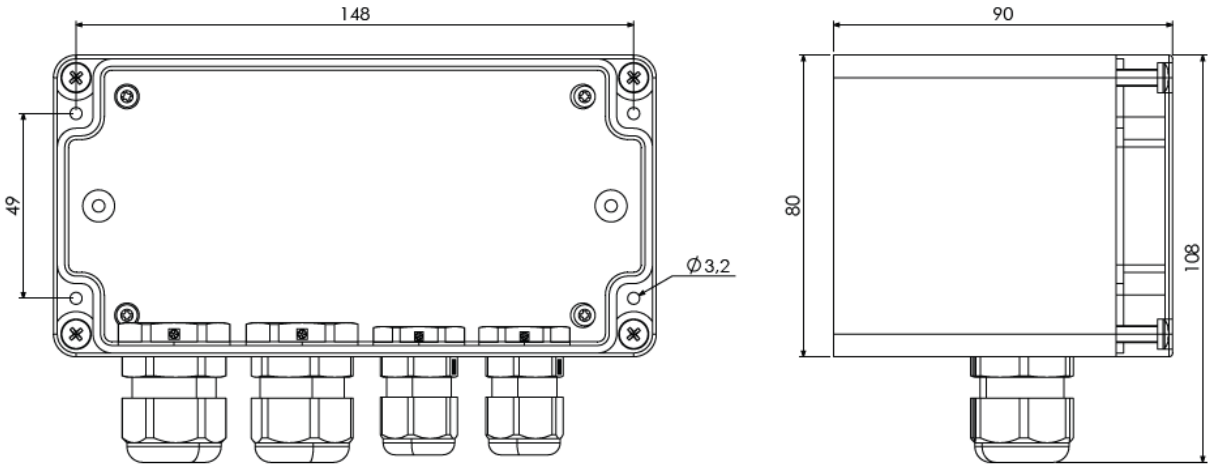
Carefully unpack the product and remove any internal packing material. Examine each item for obvious physical damage. Immediately report any claims to the carrier.

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

5.2. Overview

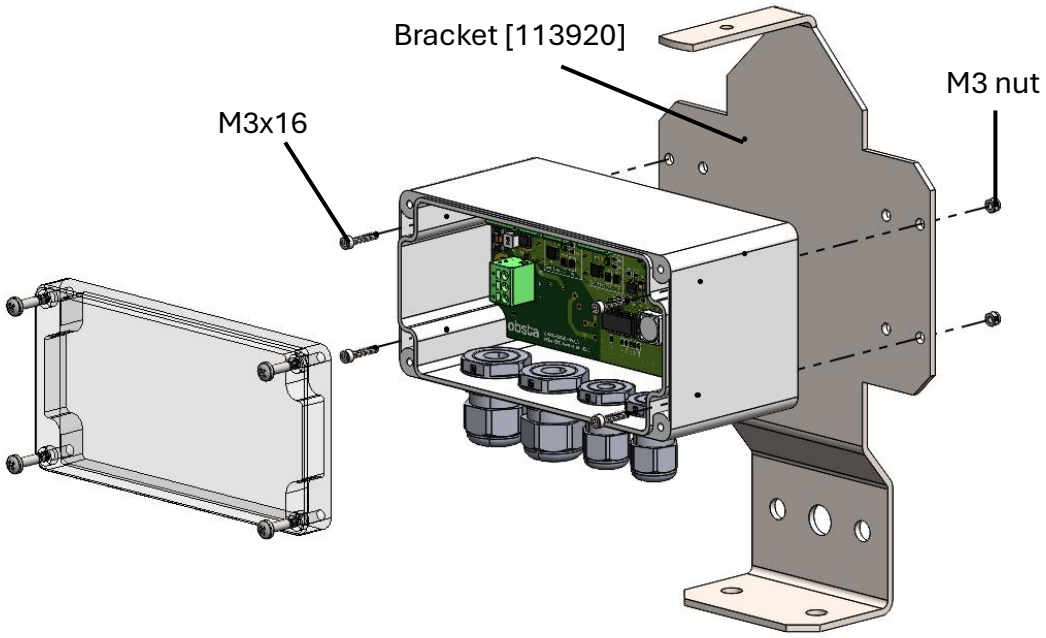


5.3. Mounting



The enclosure is assembled using the four 3.2 mm diameter holes. OBSTA recommends using M3 screws with lock nuts.

For certain installations, a bracket can be provided (sold separately).

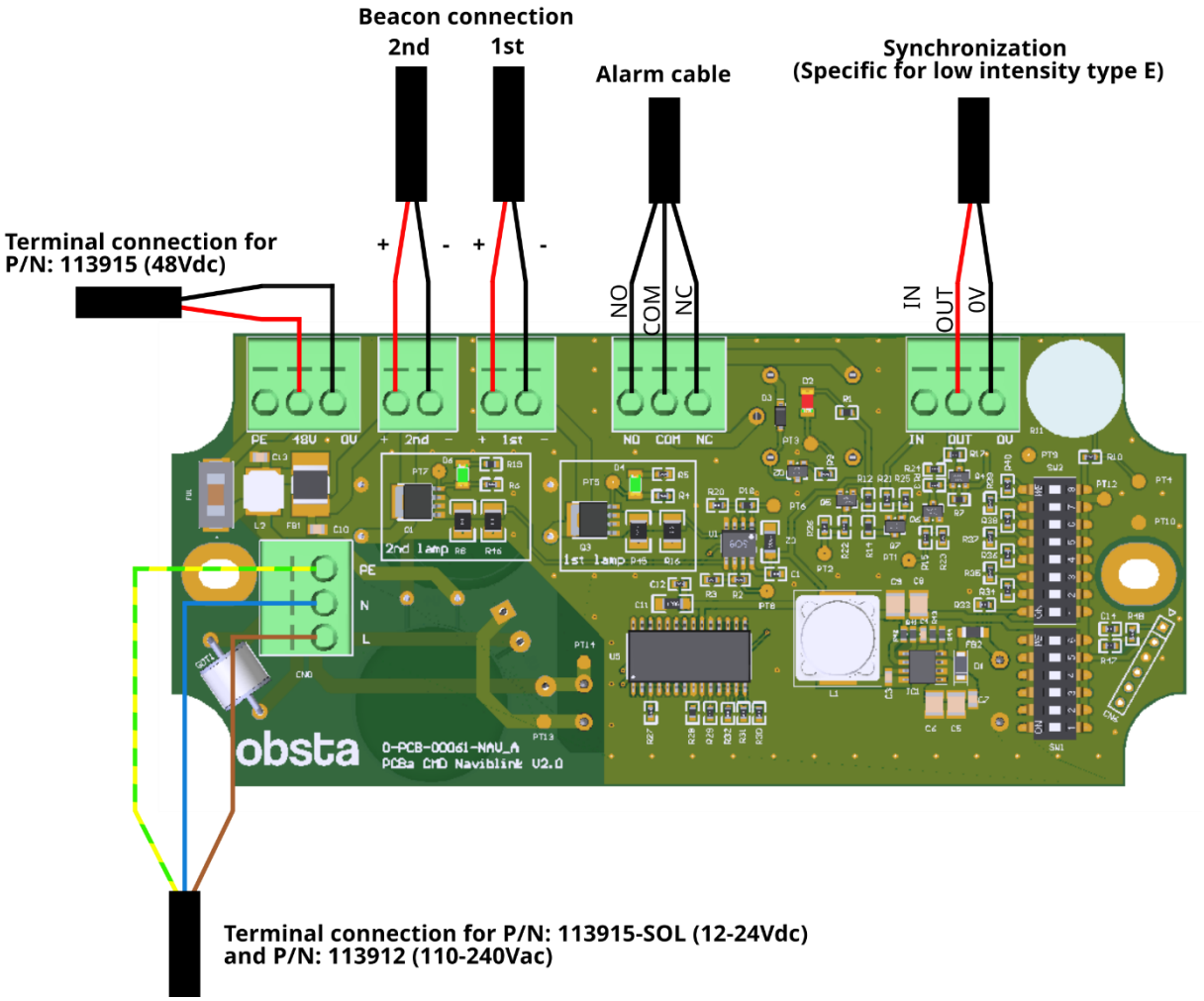


6. Wiring

6.1. 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 area below is cordoned off to prevent injury from falling tools or components.
- **Check 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 OBSTA'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.
- **Number of lamps**: If more than 1 lamp is connected on "1st" or "2nd", all lamps must be wired in parallel.
- **Polarities**: The polarities must be correctly positioned on the DC power supply (for models 113915 and 113915-SOL). 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 in active redundancy (1 main light and 1 optional back-up light) at night operation only (photo sensor activated).

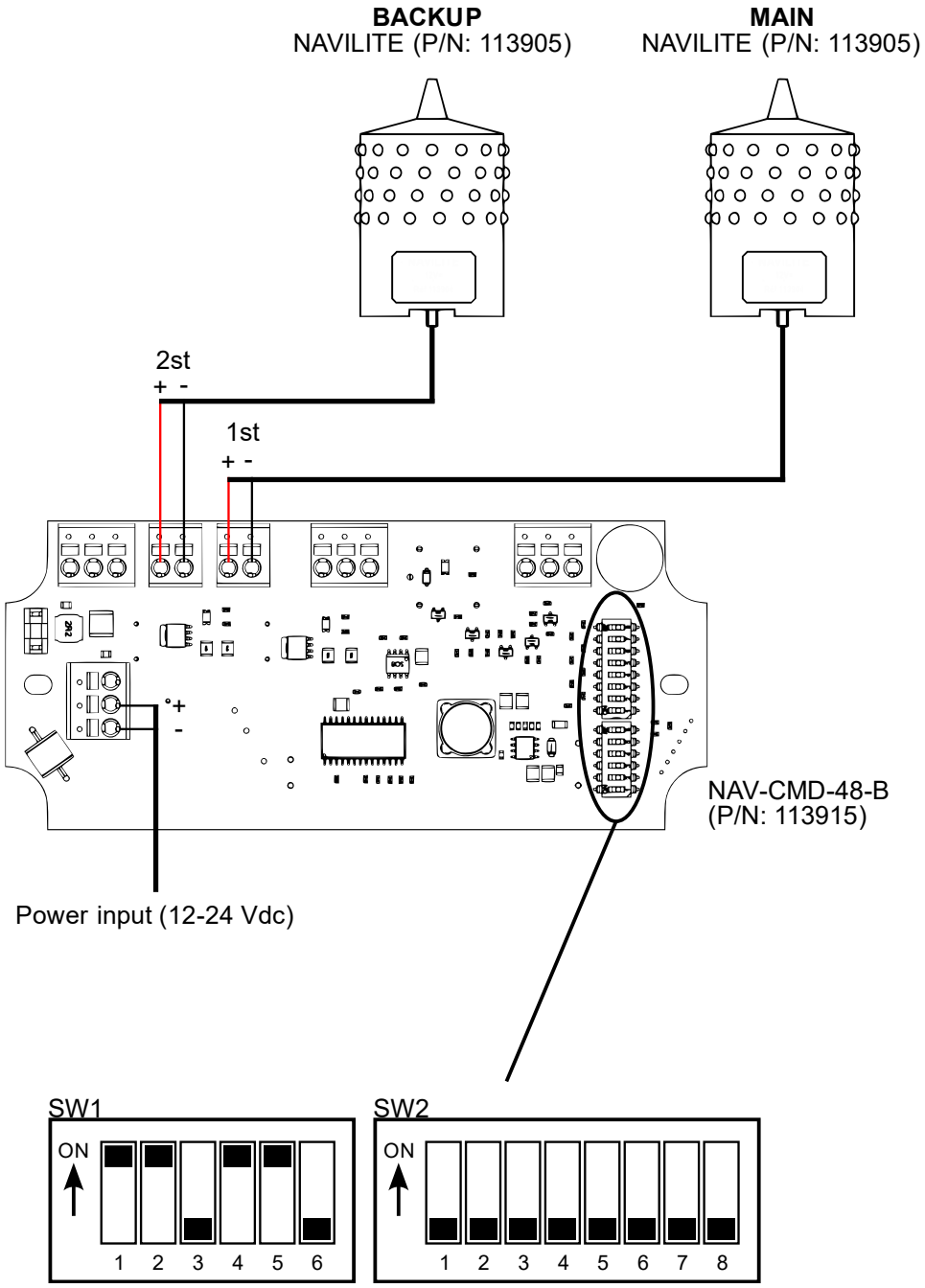
6.2. Overview



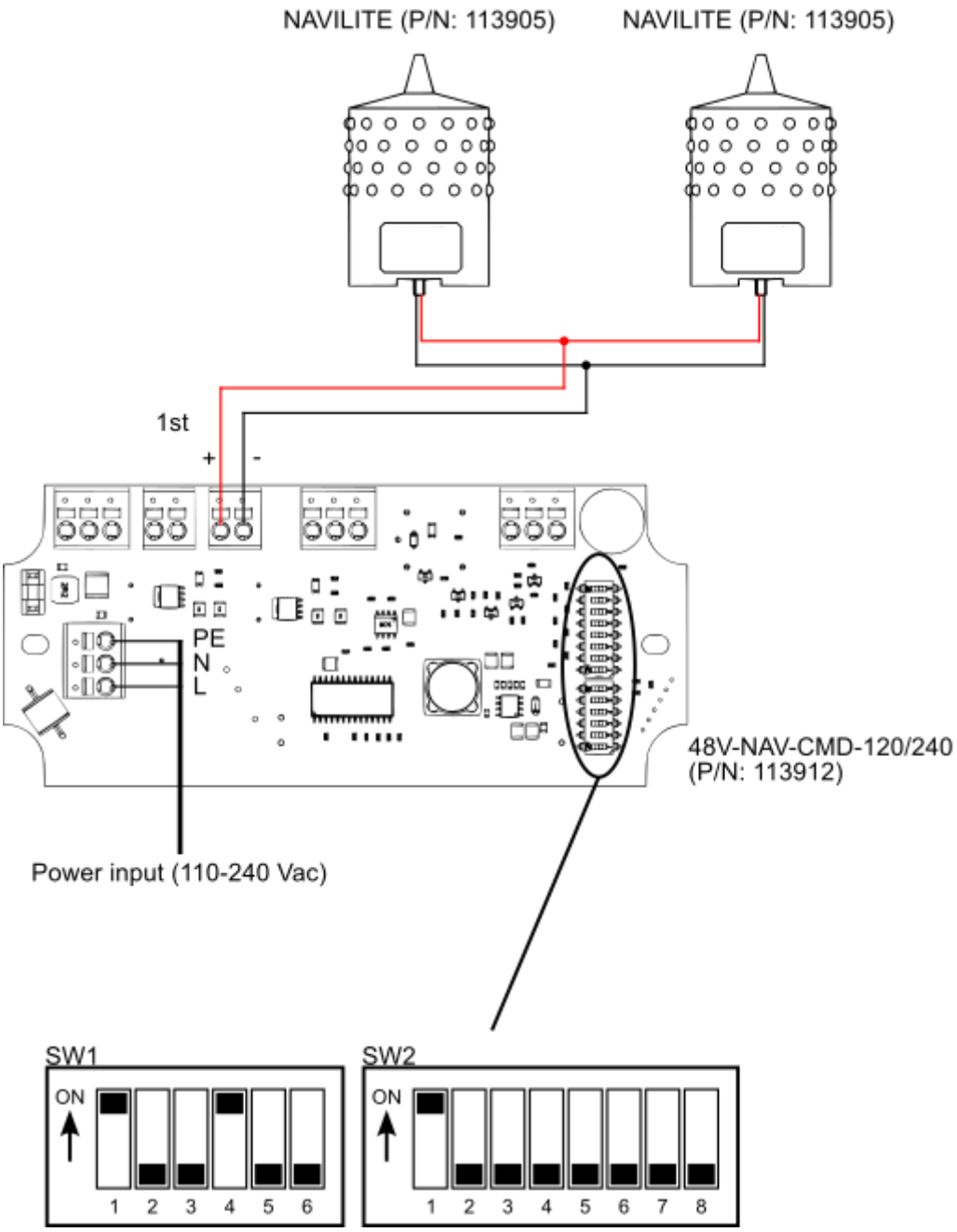
6.3. Typical wiring for red only

The following typical wiring are provided for illustrative purposes only.

- Typical “main and backup” and “night only” configurations for 48V-NAV-CMD-48-B controlling 2 NAVILITE RED only.



- Typical “Simultaneous” and “day and night” configurations for 48V-NAV-CMD-120-240 controlling 2 NAVILITE RED only.



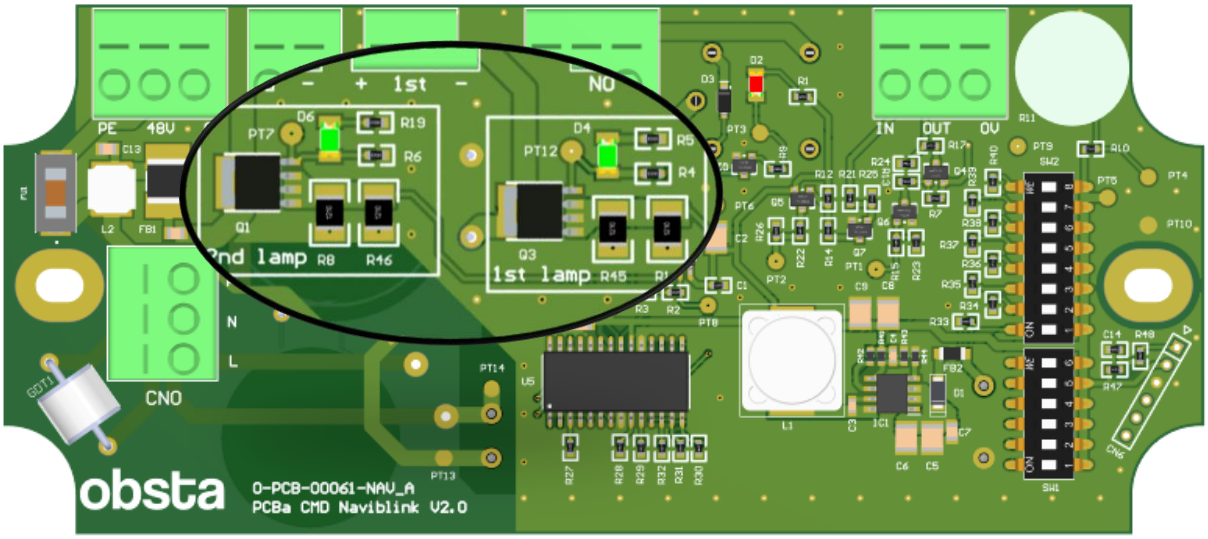
7. Startup and configuration

7.1. 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.

When the control box is powered up, the connected lamp(s) light up and follow the dip switch configuration.

If no defaults are detected on the terminal blocks “1st” and “2nd”, the green operating leds (D4 and/or D6) light up. They remain lit if the lamps are in fixed mode and flash at the same time as the lamps if they are in flashing mode.



7.2. Configuration

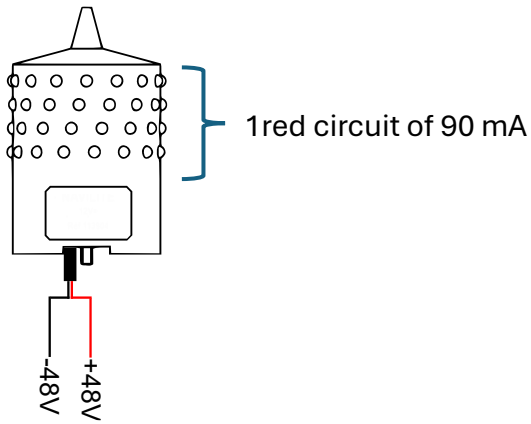
All dipswitches are factory set to use NAVILITE beacons in fixed mode or as customer requirements. Any change of dipswitches position must be done with the agreement of OBSTA.

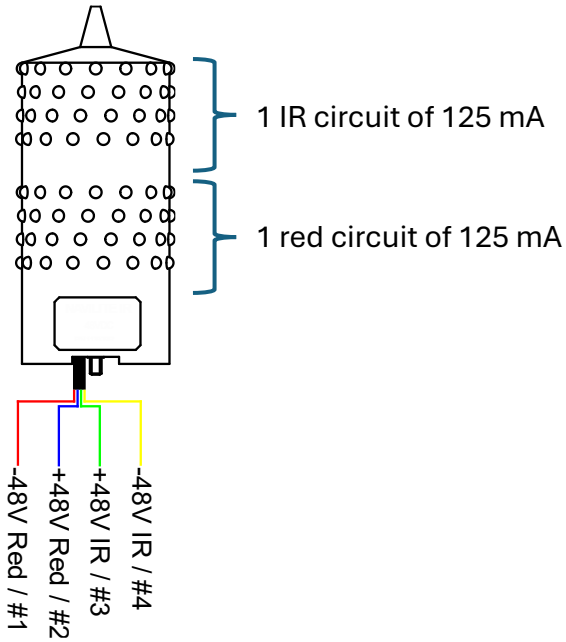
The internal program and dipswitches function are exactly the same, whether you use a standard red lamp or an infrared (IR) version. However, the interpretation of the settings by the board varies depending on the connected hardware. For any installation including infrared lamps (models 113905IR or 113905IRCH), please refer to Section 7.3 to correctly configure the board according to their specific power consumption.

7.2.1. The principle of stage (circuit)

The setting depends on the number of circuits (or "stages") to be powered:

- A standard red lamp (113900 / 113905 / 113965) = 1 circuit
- A dual-light red + infrared lamp (113905IR) = 2 circuits (one red stage and one infrared stage).





7.2.2. SW1

SW1						
N°	**1**	**2**	**3**	**4**	**5**	**6**
ON	Nominal	Day and night	-	ON	Main and backup	125mA
OFF	Reset	Night only	OFF	-	Simultaneous	90mA

Remark: The average current of the red circuit for all lamps (113900, 113905, 113965) is 90mA, the setting of SW1-6 should be OFF "90mA".

7.2.3. SW2

The setting of SW2 depends on the operating mode selected on SW1-5:

- Main and backup mode (SW1-5 set to ON): Configure SW2 to specify the number of lights connected to each channel (1st or 2nd) individually.
- Simultaneous Mode (SW1-5 set to OFF): Set SW2 to indicate the TOTAL number of lights connected to the entire unit (1st and 2nd).

SW2								
N°	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ON	Nb lamp	Nb lamp	-	Flash freq	Flash freq	Flash duration	Flash duration	V1 permanent and V2 flash
OFF	Nb lamp	Nb lamp	OFF	Flash freq	Flash freq	Flash duration	Flash duration	-

SW2-1	SW2-2	Number of lamps in operation
OFF	**OFF**	1 Red circuit
ON	**OFF**	2 Red circuit
OFF	**ON**	3 Red circuit
ON	**ON**	4 Red circuit

****The following bits describe the flash frequency:***

SW2-4	SW2-5	Flash frequency (FPM)
OFF	**OFF**	Continuous (fixed mode for standard cases)
ON	**OFF**	20 FPM
OFF	**ON**	30 FPM
ON	**ON**	40 FPM

****The following bits describe the flash duration:***

SW2-6	SW2-7	Flash duration (ms)
OFF	**OFF**	100 ms flash
ON	**OFF**	200 ms flash
OFF	**ON**	300 ms flash
ON	**ON**	400 ms flash

****for specific case swiss. IR and/or red could be flashing mode, otherwise red/ir steady.***

7.2.4. Reset

If SW1-1 is OFF, the program goes into reset mode. In this mode:

- The “1st” and ”2nd” output default are cleared
- The first and second lamp are turned off
- The program waits for the exit from reset mode
- The Alarm is off
- The led signalization (D7) is off
- If the lamp is in slave mode (SW1.4 OFF and SW1.3 OFF), the ***SYNC_OUT*** signal is the same as ***SYNC_IN*** signal.

7.2.5. Alternated mode

If the SW1.1 (Nominal mode) and SW1.3 are ON (alternated mode), the program goes into alternate and nominal mode. In this mode, except in the event of default:

- Alarm is off
- The active channel lamps light up for 1000ms 30 times a minute (alternating with one lamp followed by the other).
- The associated channel led (D6 and D4) light up at the same time as the channels flash

7.2.6. Main and backup

Two lamps operate in active redundancy. If a fault is detected in the latter (power failure, lamp failure, over or under voltage), the controller automatically switches to the backup beacon to ensure continuity of lighting. An alarm signal is emitted to indicate the switchover and allow corrective maintenance without interrupting service.

The main lamp, connected to the “1st” terminal block, always remains on. The backup lamp, connected to the “2nd” terminal block, remains off and only turns on in the event of a failure of the main lamp.

7.3. Infrared lamp

The electronic board continuously monitors the lamps connected to it. For this monitoring to be effective, you must configure the board using the dipswitches to specify the expected total power consumption. The software will then compare the actual power consumption at the terminals with this reference value to detect any under- or over-consumption.

7.3.1. Dipswitches setting

Setup is a two-step process:

- **SW1-6 (Base Current):** Sets the current consumption of a single circuit (125 mA or 90 mA, depending on the lamp model). For the infrared lamps listed, the red stage and the infrared stage each consume 125 mA. This switch must therefore be set to 125 mA.
- **SW2-1 and SW2-2 (Circuit Multiplier**): Indicate to the board the total number of connected circuits, as shown in the table below:

SW2-1	SW2-2	Number of connected stages
OFF	**OFF**	1 Red or IR circuit
ON	**OFF**	2 Red and /or IR circuit
OFF	**ON**	3 Red and /or IR circuit
ON	**ON**	4 Red and /or IR circuit

7.3.2. Summary of consumption thresholds

The software measures power consumption at the terminals and compares it to the values defined below to determine whether a lamp is under-consuming (failure) or over-consuming (malfunction).

SW1-6	SW2-1 / SW2-2	Average power consumption of the lamps connected to the board (1st and 2nd)
125 mA	1 Red or IR circuit	125 mA
125 mA	2 Red and /or IR circuit	250 mA
125 mA	3 Red and /or IR circuit	375 mA
125 mA	4 Red and /or IR circuit	500 mA
90 mA	1 Red or IR circuit	90 mA
90 mA	2 Red and /or IR circuit	180 mA
90 mA	3 Red and /or IR circuit	270 mA
90 mA	4 Red and /or IR circuit	360 mA

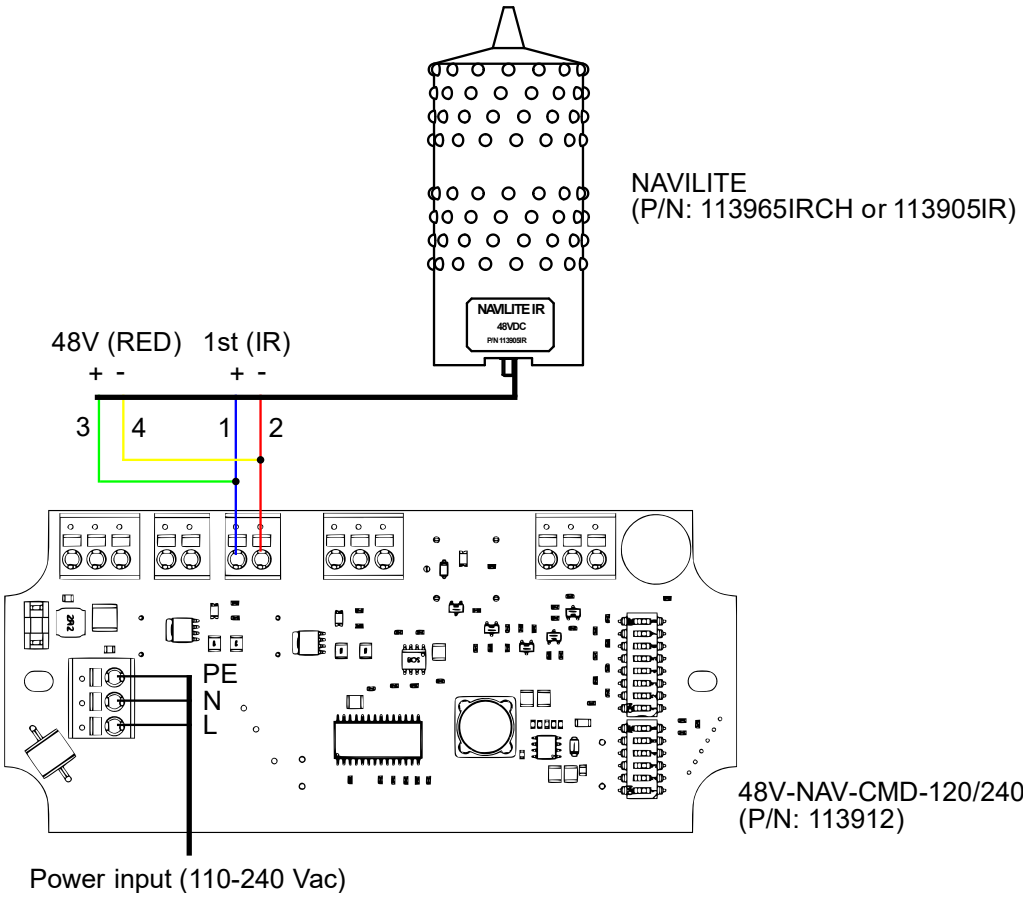
7.3.3. Steady Red and IR

In this case, the NAVILITE (113905IR) will be configured as follows:

- Steady RED stage
- Steady IR stage

SW1						
N°	**1**	**2**	**3**	**4**	**5**	**6**
ON	ON	-	-	ON	ON	ON
OFF	-	OFF	OFF	-	-	-
	Nominal	Night	NO alternate	Master	Main and backup	125 mA

SW2								
N°	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ON	ON	-	-	-	-	-	-	-
OFF	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	2 circuit		-	Steady				-



***Remark**: For this wiring setup, you can use a "90mA" configuration and a "3 red and/or IR circuit" to get close to the board's alarm threshold (the software will wait for an average current draw of 270mA). Contact OBSTA for more details.*

7.3.4. Steady Red and Flash IR

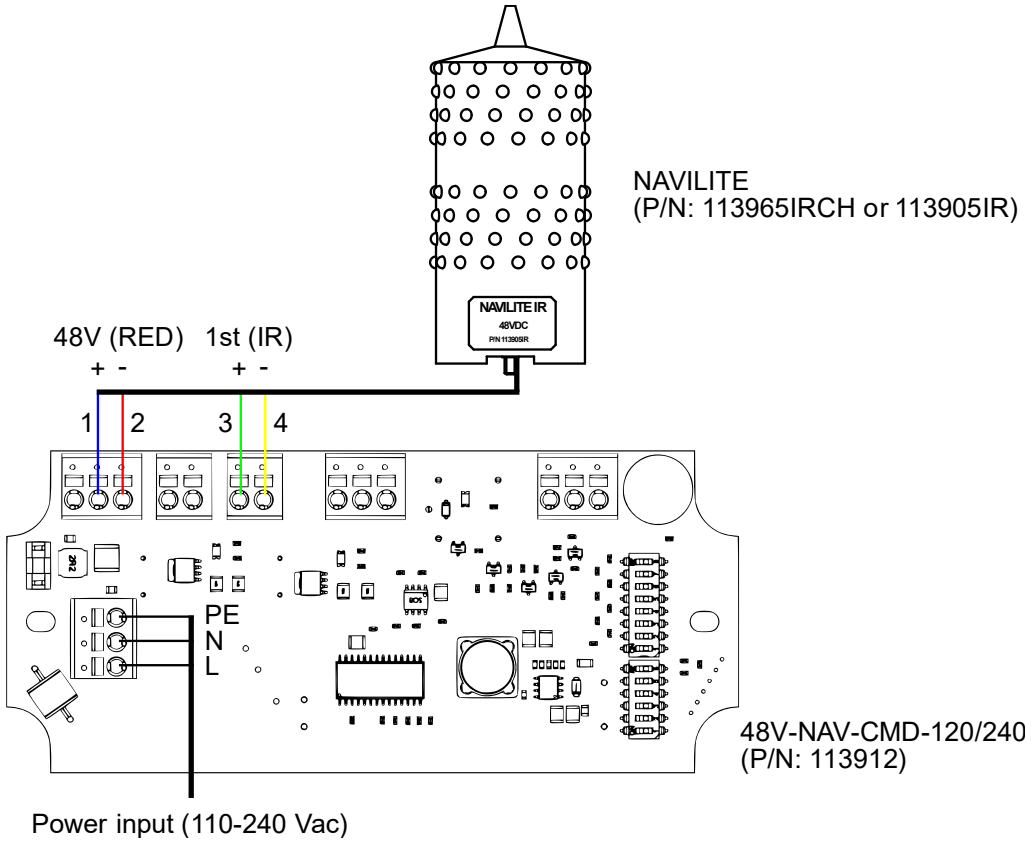
In this case, the NAVILITE (113965IRCH or 113905IR) will be configured as follows:

- Steady RED stage
- 200ms flashing IR stage (40 flash per minute)

SW1						
N°	**1**	**2**	**3**	**4**	**5**	**6**
ON	ON	-	-	ON	ON	ON
OFF	-	OFF	OFF	-	-	
	Nominal	Night	NO alternate	Master	Main and backup	125 mA

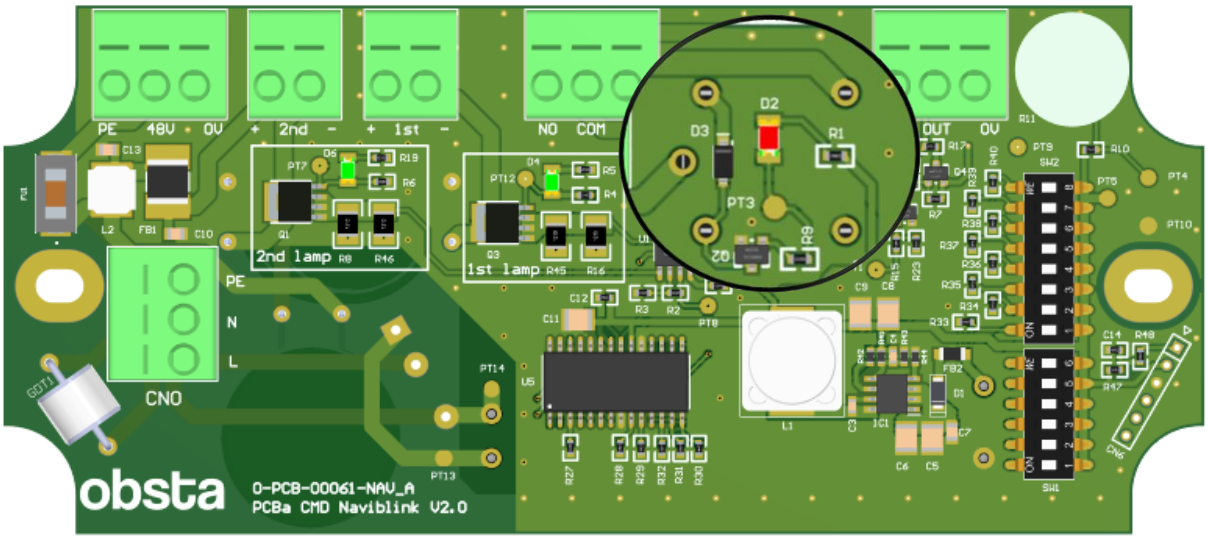
SW2								
N°	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ON	ON	-	-	ON	ON	ON	-	-
OFF	-	OFF	OFF	-	-	-	OFF	OFF
	2 lamps connected		-	40 FPM		200ms flash		-

The red stage of the lamp is directly powered by 48 V. This stage remains constantly powered and cannot be configured via the dip switches.



7.4. Default

The command box incorporates default management based on current detection. An LED (D2) indicates the status of the lamps connected to the board in real time.



The control box signals a fault in the following situations:

- Low-current or over-current in the lamp(s)
- Short circuit in the lamp(s)
- Power supply failure
- In a **“Main and Backup”** configuration, the card automatically switches from the main lamp to the backup lamp in the event of a main lamp failure. This action triggers the card's fault LED to light up to signal the incident.

In the event of a fault: the red indicator lights up, and the alarm relay is activated. The COM-NO (normally open) contact closes and the COM-NC (normally closed) contact opens.

8. Maintenance

Test	Frequency	Preventive action	Risk
Wiring	Annual	Visual control Tightening PCB wires Tightening PCB wires	Cable degradation Poor contact Lamp in default mode
Waterproof	Annual	Visual verification	Water infiltration Short circuit Lamp off
Clamping	Annual	Checking tightness	Box falling Tightness degradation

9. Technical specifications

Designation	Comment	Min	Nominal	Max	Unit
Input voltage	113915-SOL 113915 113912	10.8 43.2 110	12/24 48 90/240	27 55 264	Vdc Vdc Vac
Cable diameters	M16 M20	5 7	- -	10 13	mm mm
Temperature		-20	-	55	°C
Connection	By terminal connection, wire cross section up to 2.5mm^2				