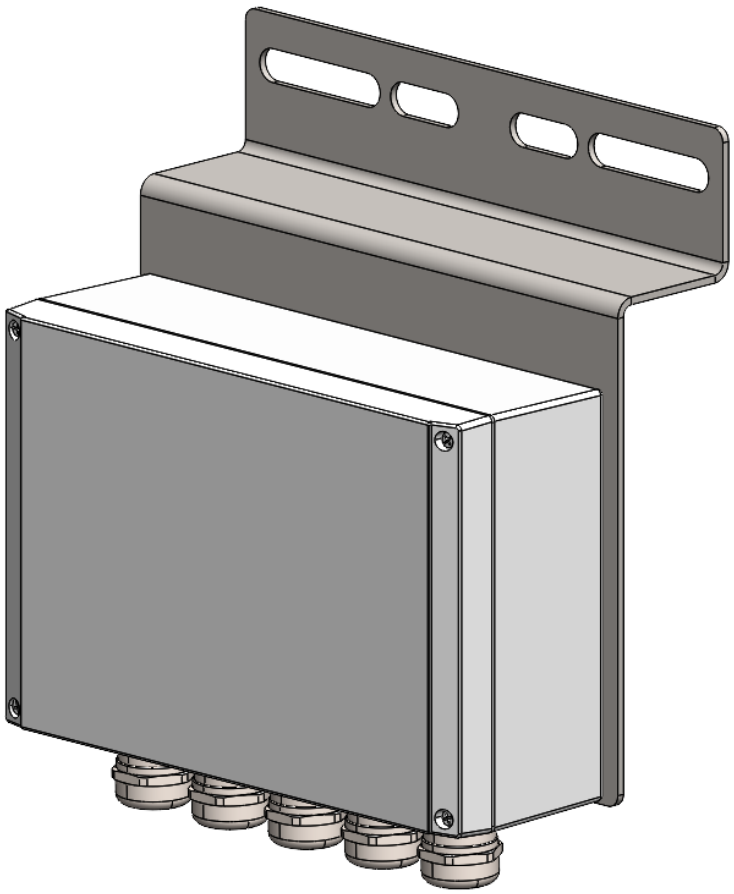
O-MAN-00007-OFC

USER MANUAL

Control box for DC obstruction lights

OBSTALINK-DC // 114800



www.obsta.com

1. Product name and part number

Description	Part number (P/N)	Power supply	QR code
OBSTALINK-DC	114800	8-56Vdc	

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 document defines the detailed requirements of the OBSTALINK-DC project, manufactured by OBSTA, describing its functional behavior.

The OBSTALINK-DC acts as a gateway between monitored devices (lighting, etc.) and a control/monitoring system.

The OBSTALINK-DC operates with 12Vdc, 24Vdc, and 48Vdc power supplies, with a maximum allowable voltage of 56 VDC.

For supervision, visit monitoring.taack.com

4.2. Description

- Aluminum case 240x160x85mm.
- Several connection terminals for periodic status checks on all brands of beacon lights operating at 10 to 60 Vdc.
- Dipswitch for card configuration.
- MODEM: Connects to the Internet via the mobile network.
- Raspberry module: Saves and launches the installed program.
- Micro SIM: Allows the MODEM to connect to the network.
- Ethernet: Provides a stable and fast internet connection.
- USB A and C ports: Allows you to connect peripherals and/or transfer and exchange data.
- Possible connection of a photocell.

4.3. Operation

- Lamp control.
- Monitoring the power source of beacons.
- Monitoring of instantaneous consumption for up to 3 lamps (or 3 lamp groups depending on wiring).
- Telemetry.
- Definition of alarm thresholds and alert Emails (NOTAM) on the *monitoring.taack.com* website.
- In the event of a power failure, send an error message before the system shuts down completely.

Beacon dry contact:

Connect the beacons to dry contact. To test whether the beacon has a problem, press the "tact switch". If the green LED lights up, the beacon is OK.

On the dry contact connector per channel there is a 5Vdc logical signal emitted and Input to check the beacon.

For dry contact connection in normal mode (no default) the “OBSTALINK DC” is expecting to receive the 5Vdc signal emitted by the connector. That means the beacon must be cabled in a way that allows this signal to be going through when everything is operating normally.

Photocell:

A photocell can be connected for the Day, Twilight and Night (DTN) detection. For connection, see Photocell instruction (P/N: 100757)

Current sense:

Continuously measures the current flowing through the connected beacons and determines the presence or absence of faults. 3 Connection terminals are available (1 per beacon).

Raspberry / MODEM:

A Raspberry module 4 board and a MODEM are added to the main board for program management (Raspberry) and 4G data management (MODEM)

USB / Ethernet / SIM

- *USB-C is used for programming Rasberry. When in use, all other peripherals are disabled.*
- *The USB-A port is used as a peripheral port (for keyboard, mouse, etc.).*
- *The SIM port is used for the MODEM*
- *Ethernet connection is possible at 100 to 1000 Mb per second (only on the top port).*

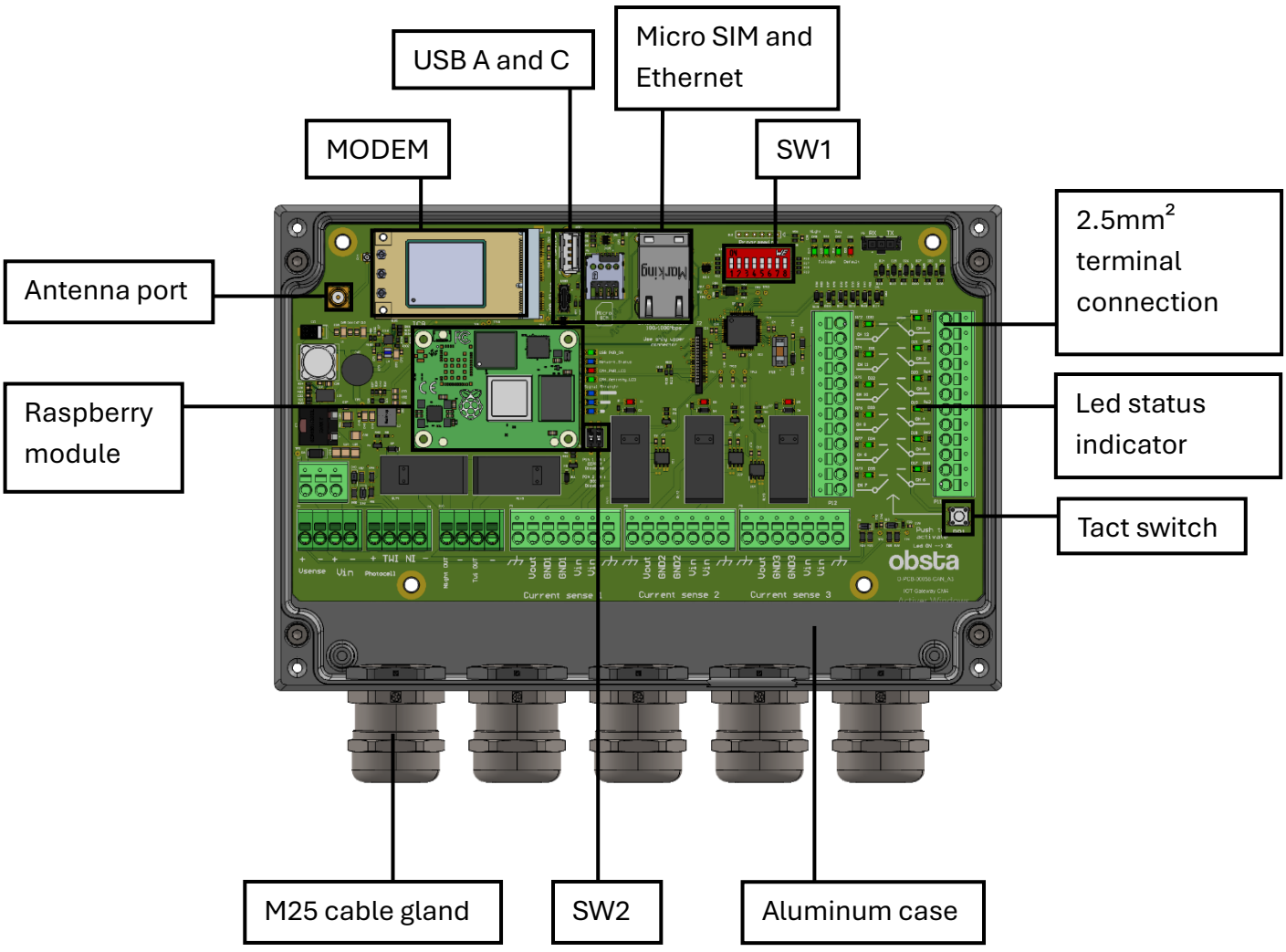
5. Installation

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



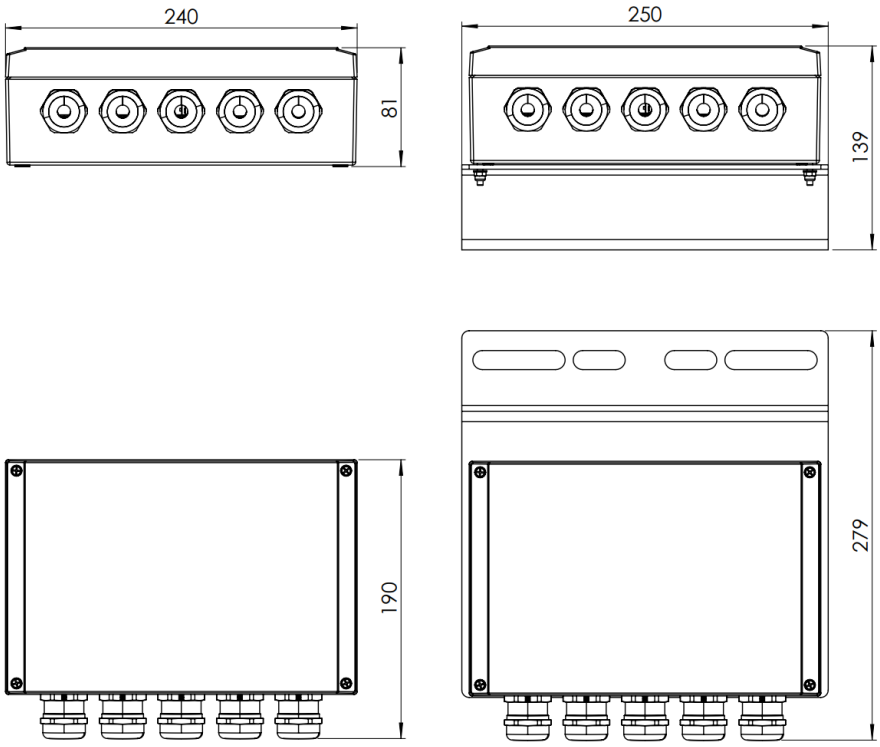
5.3. Mounting

The IOT assembly fixture must be mounted perfectly horizontally. If mounted in any other position, the product will not be able to meet its intended sealing requirements.

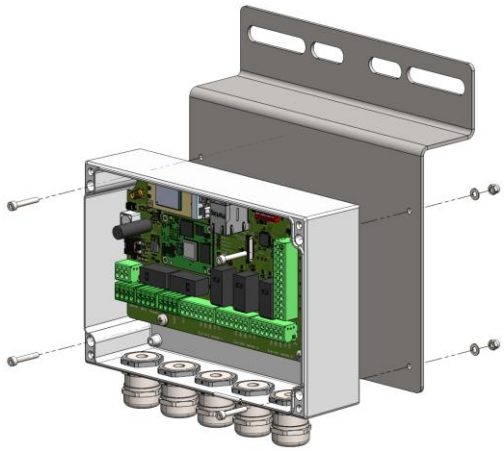
We recommend that the metallic base of the product be connected through a grounding kit to the local grounding of the tower.

We strongly recommend taping the cable glands through which the connection cables pass after tightening.

Box only **Box with fixing bracket**



The enclosure is assembled using the four 4.2 mm diameter holes. OBSTA recommends using M4x16 screws with lock nuts.

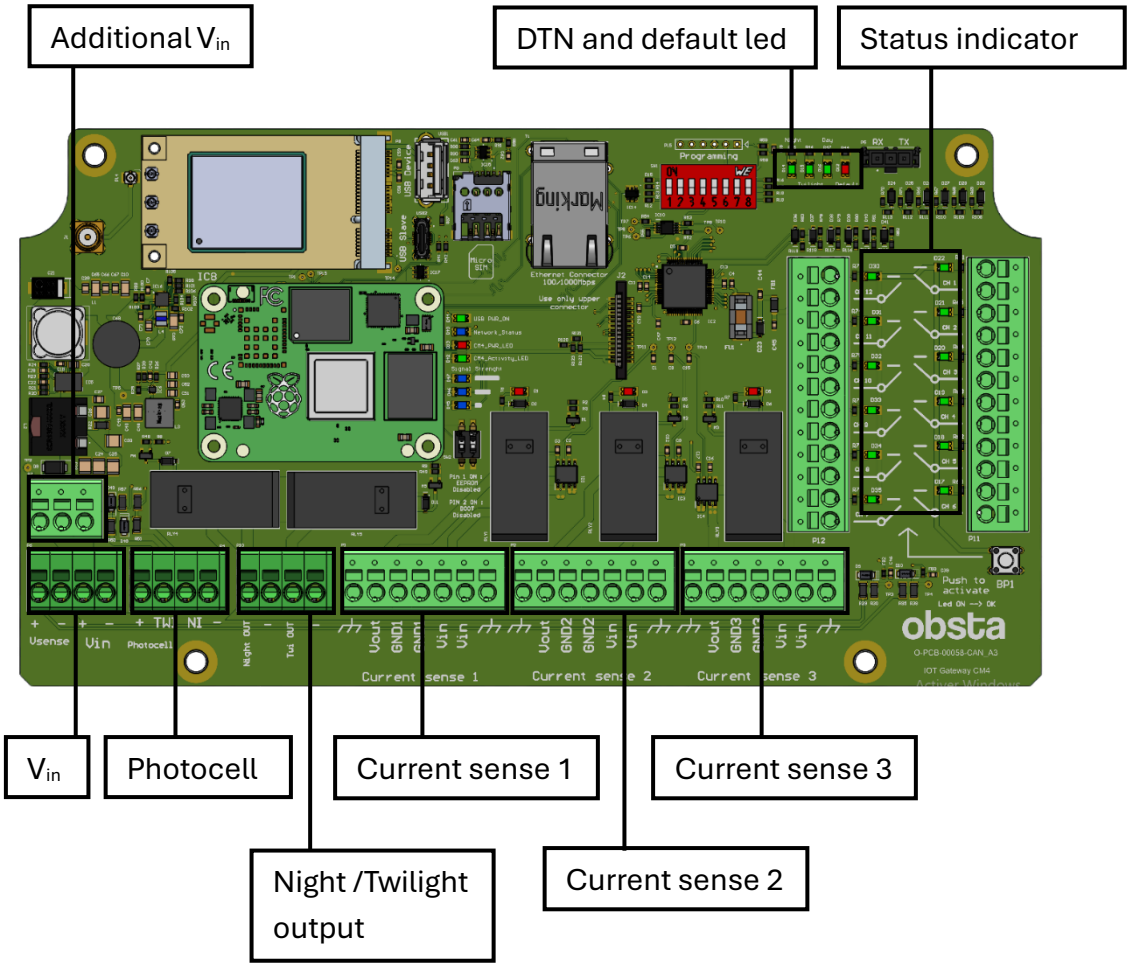


6. Wiring

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 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.
- **Number of lamps**: If more than 1 lamp is connected on "1st" or "2nd", all lamps must be wire 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).
- **Two product references are available:** Connected devices will be powered by the OFC-CTR input voltage. The maximum current allowed for this product is 10A.

6.2. Overview



Status indicator: Dry contacts must be wired in a closed loop to indicate that there is no alarm. When the green LED is lit, it means that there is no alarm and the system is OK.

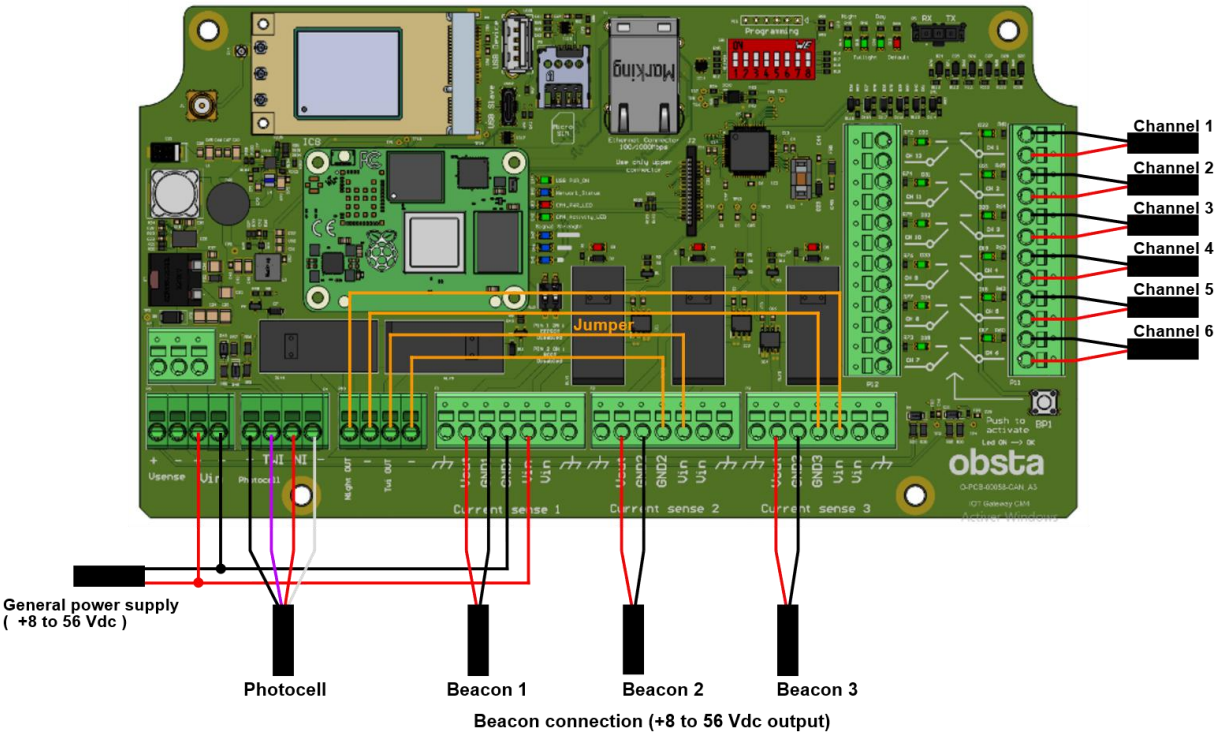
Night/Twilight output: This terminal block automatically distributes the supply voltage (V_{in}) to the beacons: it provides the necessary power conditionally, activating the twilight (TWI OUT) or night (NIGHT OUT) outputs according to the brightness measured by the photocell.

	Day	Twilight	Night
Night OUT	0V	0V	V_{in}
Twi OUT	0V	V_{in}	V_{in}

Current sense 1, 2 and 3: It is recommended that you connect your low-power equipment to Current sense 1: this channel is dedicated to lower currents (5A max), allowing for much finer and more accurate readings than channels 2 and 3 (10A max).

The following table describes the functions of the connection terminals and the meaning of the screen printing on the board. All connectors described below are compatible with 2.5 mm^2 and can accommodate a voltage between 8 Vdc and 56 Vdc:

Screen printing	Function	Wiring (diagram)
V_{in} (+ | -)	Power supply	10 to 60 Vdc (DC power supply coming from DC UPS or solar kit)
Photocell (+ | TWI | NI | -)	Detects change between day, dusk, and night and trigger a change in the status of the beacons.	Photocell
Night OUT | - | Twi OUT | -	Distribute tension from photocell to beacons	Jumper
Current sense 1 to 3	Beacon connection	Beacon 1 to 3
CH 1 to 12	Beacon state relay	Channel 1 to 6 (7 to 12 not represented)

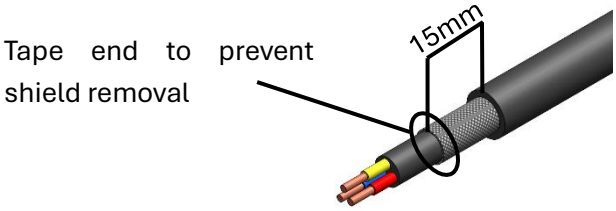


<u>Important</u>: The connected beacon must have a power supply voltage that is strictly identical to that of the power supply.

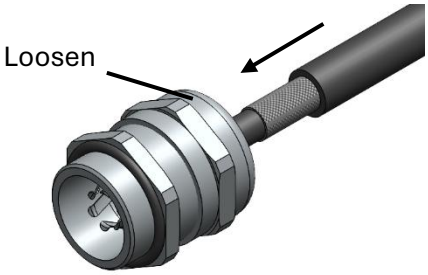
6.3. Cable gland installation

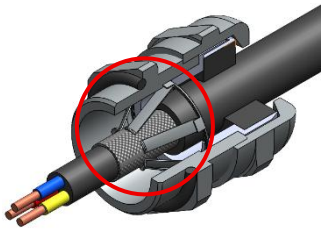
As a reminder, all shielded cables must be earthed at both ends. It is the installer's responsibility to check that OBSTA cabinets and lamps are correctly wired.

- Strip excess cable length to expose shielding.
- Leave 15mm of shielding, strip the rest.



- Thread the cable through the cable gland (the ring is loosened but not removed) so that the shield is in contact with the gland springs.
- The gasket must be correctly positioned flat and in its housing for optimum sealing.





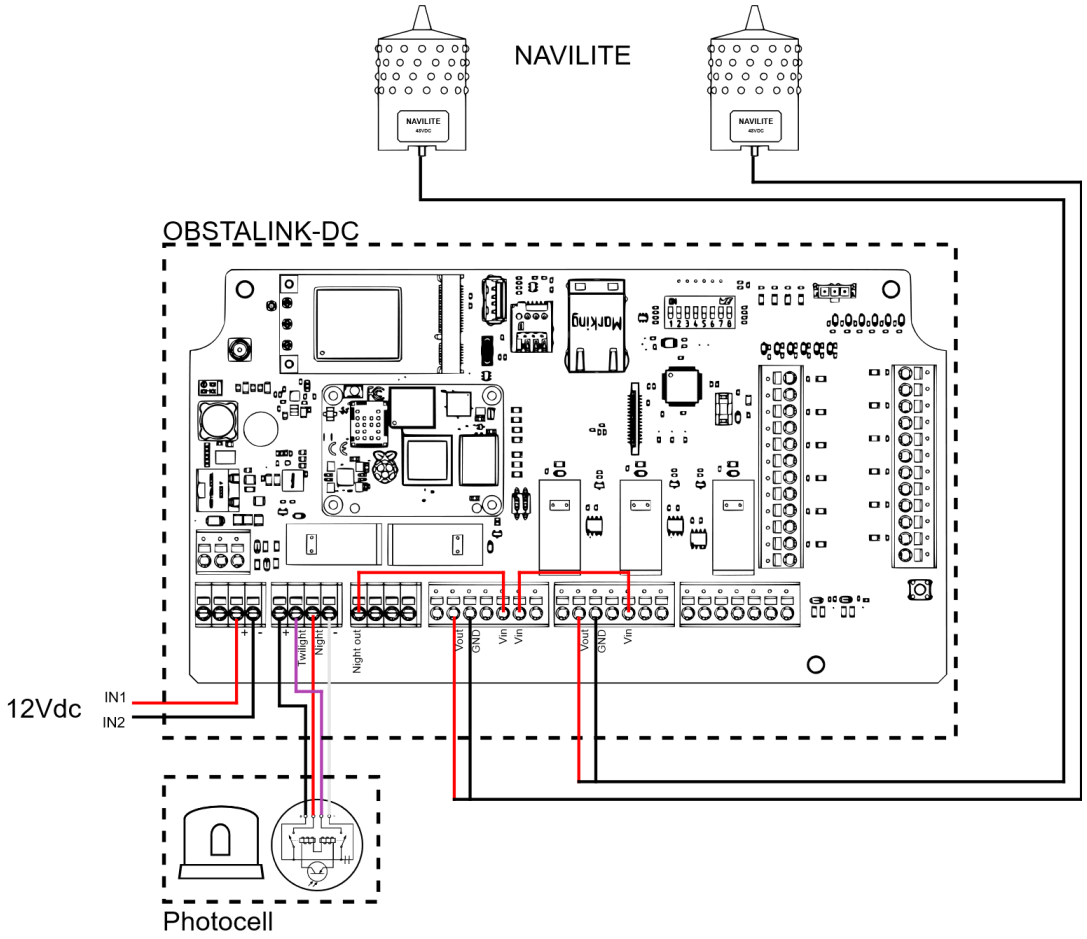
- Tighten the gland ring with the appropriate wrench.
- Once the cable has been clamped in the cable gland, cut and strip the wires to the length required to connect the terminal blocks (don't forget to fit cable ferrules before connection).

CEM	Cable diam min (mm)	Cable diam max (mm)	Pressure nut wrench	Locknut wrench
M25	9	17	29	29

6.4. Typical wiring

The following typical wiring are provided for illustrative purposes only.

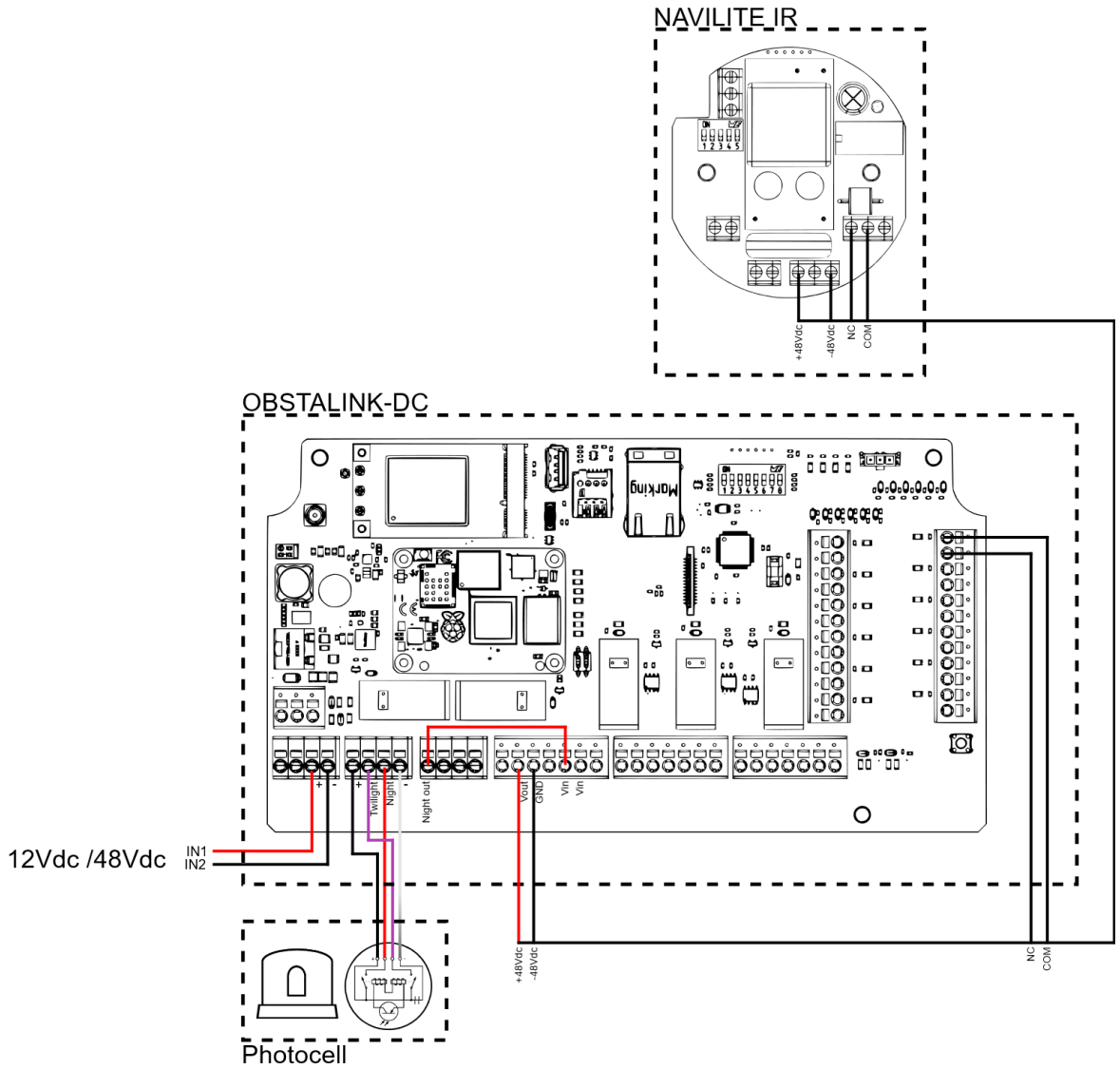
Two low-intensity red steady 12Vdc beacons, powered only at night.



Explanation:

- The power supply and the photocell are connected.
- The NAVILITE connected to current sense 1 is powered by 48Vdc from the photocell (Night OUT). In this example, the NAVILITE lights up (steady red) when the photocell switches to night mode.
- The NAVILITE connected to current sense 2 is powered by 48Vdc from the photocell (Night OUT). In this example, the NAVILITE lights up (steady red) when the photocell switches to night mode.

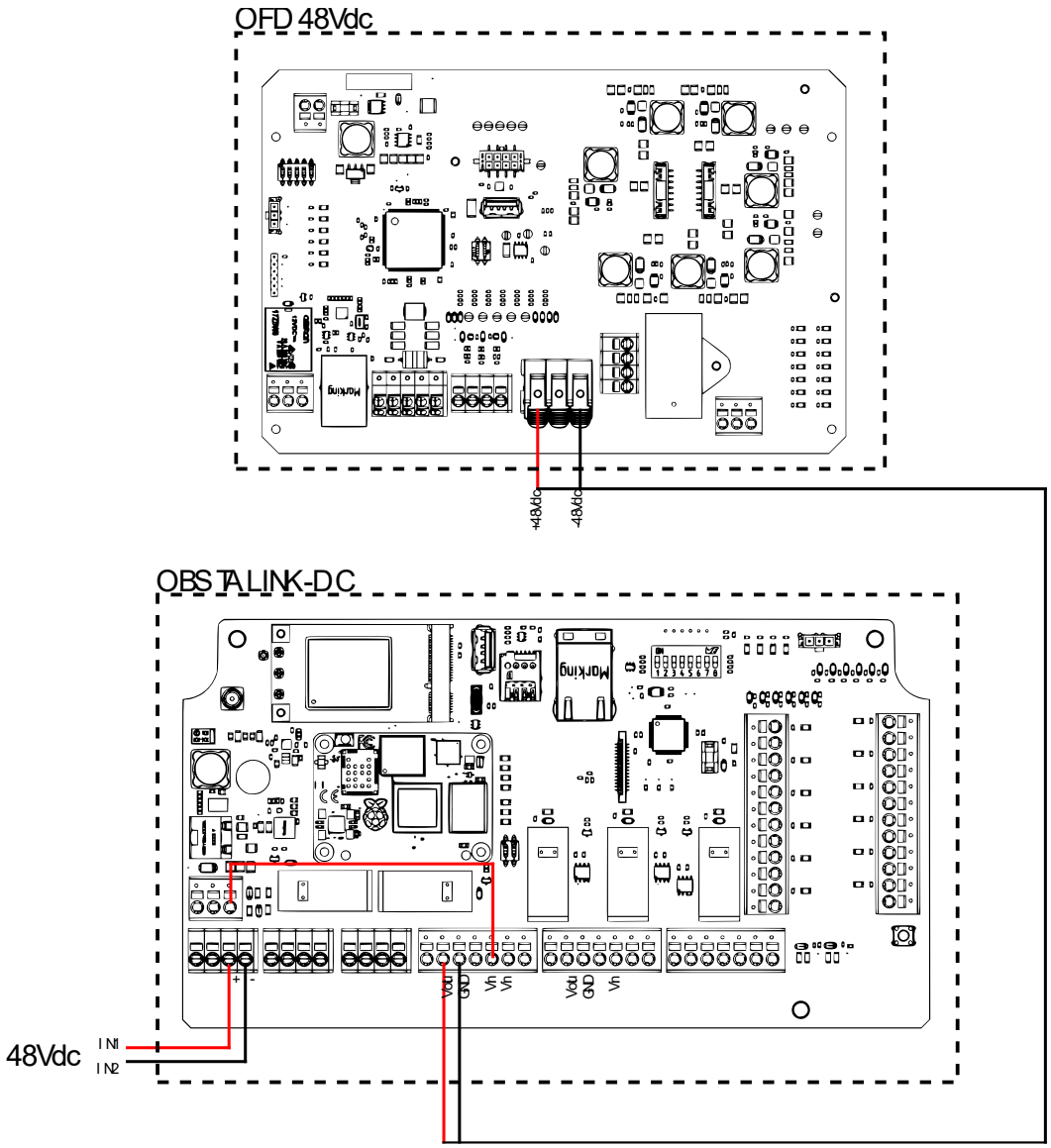
A low-intensity red/infrared beacon powered by 24 Vdc or 48 Vdc, which is only lit at night and connected to the alarm system:



Explanation:

- The power supply and the photocell are connected.
- The NAVILITE, connected to current sense 1, is powered by the voltage from IN1 or IN2 via the photocell (Night OUT). In this example, the NAVILITE activates and will operate according to its configuration when the photocell switches to night mode. The alarm is connected, allowing the status of the NAVILITE to be monitored in real time (Channel 1).

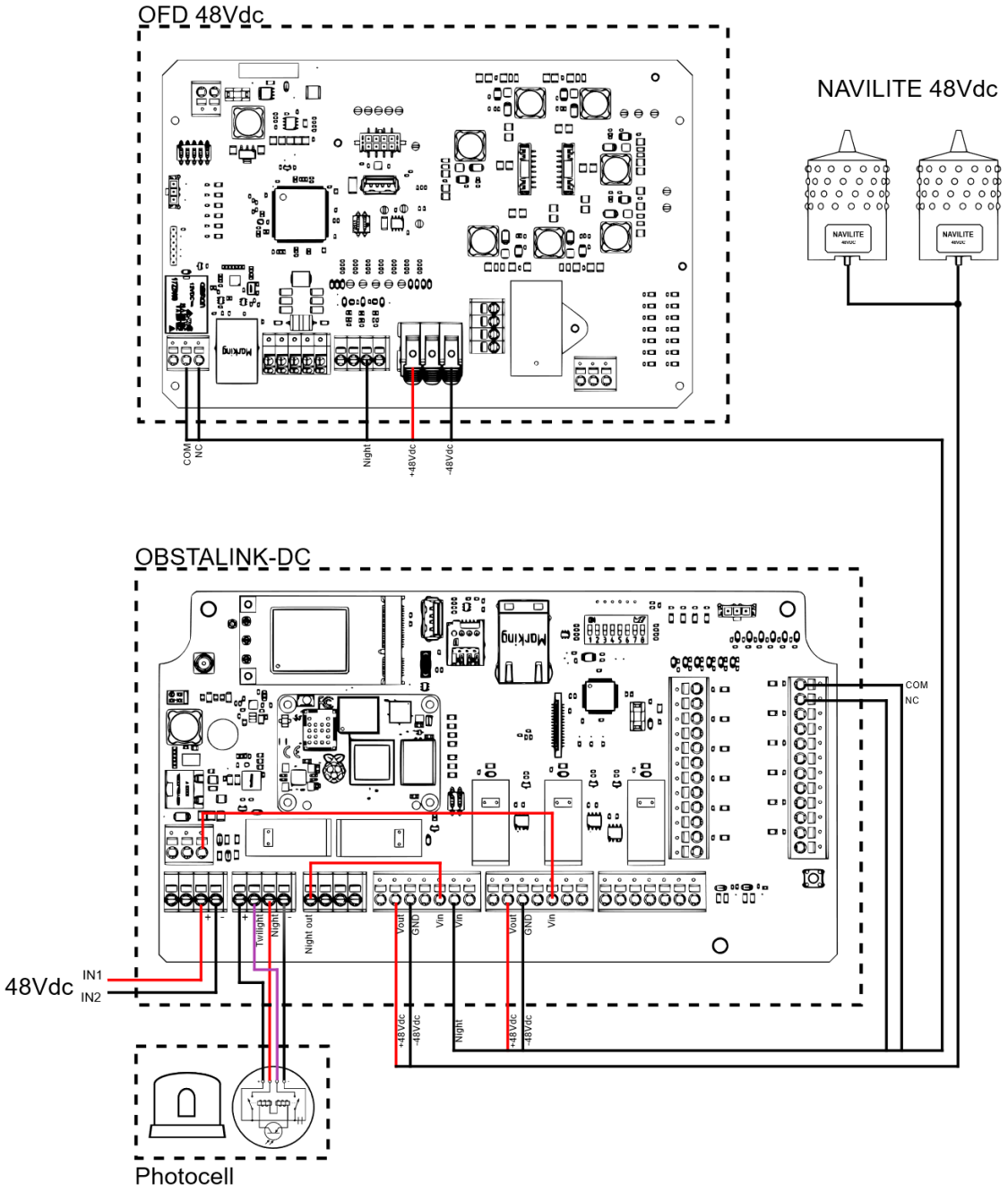
Medium-intensity beacon continuously powered by OBSTALINK-DC:



Explanation:

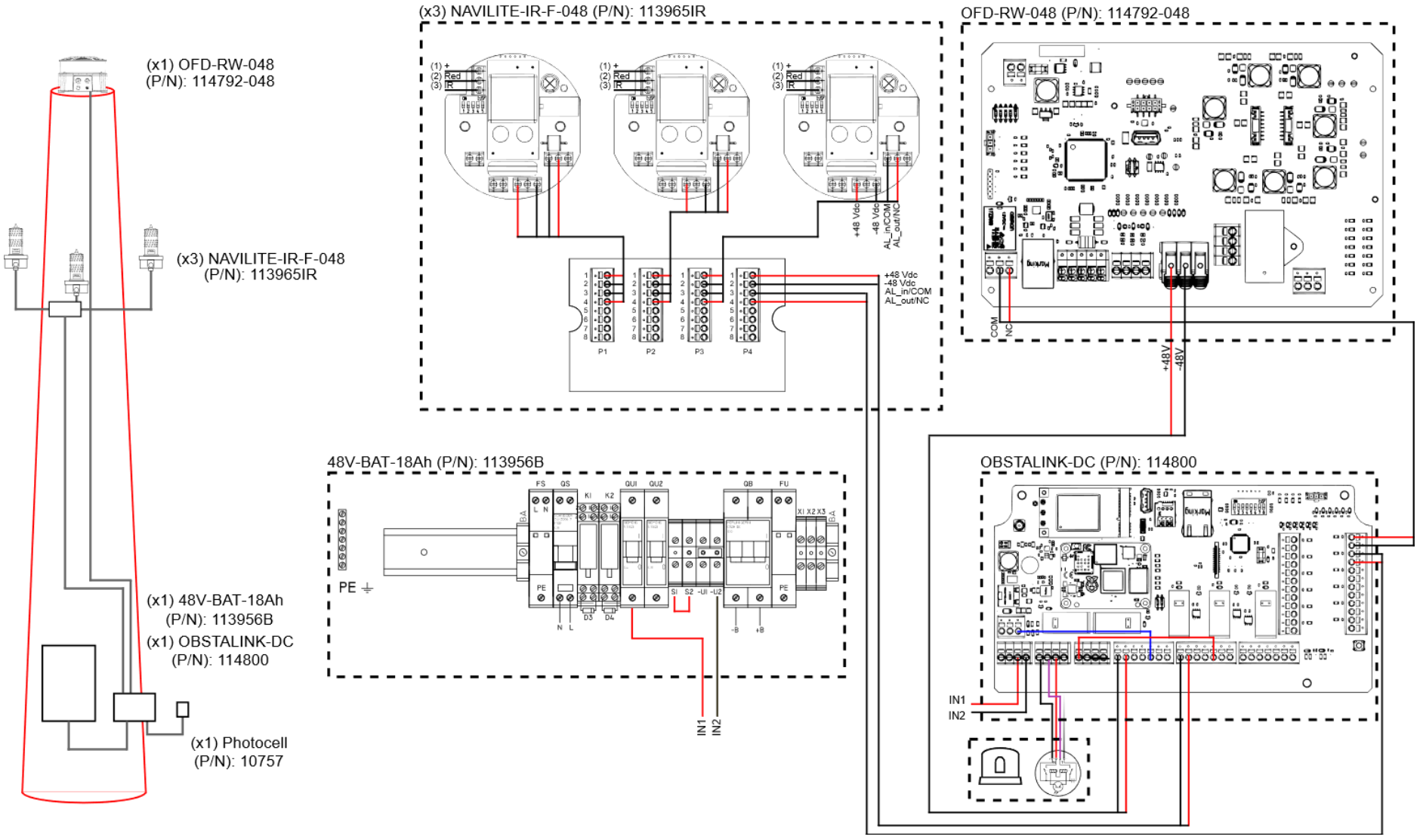
- The power supply is connected.
- The OFD beacon is connected to current sense 1 and is powered by 48Vdc via the “Additional Vin” input. In this example, the beacon is therefore always powered and will operate according to its configuration.

A medium-intensity, bi-color beacon operating day and night with alarm feedback.
And two low-intensity red steady-beam beacons operating at night only.



Explanation:

- The power supply and the photocell are connected.
- The two NAVILITE units connected to current sense 1 are powered by 48Vdc from the photocell (Night OUT). In this example, the NAVILITE units light up (steady red) when the photocell switches to night mode.
- The OFD sensor is connected to the “Current Sense 2” terminal and powered by 48 Vdc via the “Additional Vin” terminal. The signal from the photocell is taken from the “Current Sense 1” terminal block. In this example, the lamp is therefore always powered and will operate in accordance with its configuration. Switching (Example: White/Red) is possible when the photocell detects a day/night change. The alarm is connected, allowing the status of the OFD to be monitored in real time (channel 1).



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.

7.2. Configuration

7.2.1. Dipswitches 1 (SW1)

SW1								
N°	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ON	Current sense 1 used	Current sense 2 used	Current sense 3 used	DTN 1	DTN 1	Reserved		
OFF	Current sense 1 not used	Current sense 2 not used	Current sense 3 not used	DTN 0	DTN 0			

SW2-4	SW2-5	Force Day, Twilight, Night mode (DTN)
0	**0**	Do not force mode
1	**0**	Force Night mode
0	**1**	Force Day mode
1	**1**	Force Twilight mode

7.2.2. Dipswitches 2 (SW2)

SW2 is required to manage the raspberry module.

SW2		
N°	**1**	**2**
ON	EEPROM disabled	Boot disabled
OFF	-	-

7.3. DTN and default led

LED	Behavior		
	Init (3s)	After init, if no internet	Nominal operation
Default	ON	OFF	OFF if no default. Displays sequence of highest priority if default.
Day	ON	Flash (100ms period)	If corresponding mode is forced: Fast blinking every 100ms for 1sec every 4sec Else: ON for sec every 4sec
Twilight	ON		
Night	ON		

In the event of a major failure resulting in a complete shutdown of the OBSTALINK-DC system, the operation of the condition of the connected beacons remains unaffected. They continue to operate normally in autonomous mode.

OBSTALINK-DC goes in default given any of the following conditions (in priority order):

Default	Condition	Red led signal
External communication problem	Internet communication via 4G modem is down.	— — 2 long
Internal monitoring problems	At least one error encountered in the last 60 seconds.	— · 1 long and 1 short
DTN mode unchanged	The DTN mode did not change for the last 48 Hours	— 1 long
Light alarm	At least one configurated dry input is on open circuit.	· 1 short
Configuration	The channel is not configured but dry input is detected.	— · · · 1 long and 3 short
Not enough disk space	There is less than 5% of free disk space.	— — · · 2 long and 2 short

7.4. Specific case

In specific cases, and subject to validation by OBSTA, the “Current Sense 3” terminal block can be configured to function as a dry alarm contact.

This specific configuration can only be activated via monitoring.taack.com supervision site.

When this mode is activated:

- The Current Sense 3 terminal block is dedicated to the alarm function (trips in the event of a fault).
- Only the Current Sense 1 and Current Sense 2 terminals are used to connect the lights. Low-intensity lights go to Current Sense 1, and medium-intensity lights go to Current Sense 2.

8. Maintenance

8.1. Annual visit

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
Aspect (rust, dust…)	Annual	Exterior cleaning	Malfunction

8.2. Spare part

OBSTALIBNK-DC card **114802**

9. Technical specifications

Designation	Min	Nominal	Max	Unit
DC version				
Power supply (V_{in})	8	12	56	Vdc
Input current at 12Vdc	140	-	650	mA
Startup inrush current at 12Vdc	500	-	1200	mA
Power average at 12Vdc	-	2.4	1200	mA
Maximum power during over the air communication	-	-	8	W
Signal				
Dry contact output voltage	4.8	5	5.2	Vdc
Dry contact input voltage	-	5	5.2	Vdc
High level input voltage for dry contact	4	-	-	Vdc
Voltage sensor for external analog signal	0	-	Vin	Vdc
Photocell				
PSU voltage for photocell	-	V_{in}	-	Vdc
Input voltage for twilight and night signals	10	-	60	Vdc
High output voltage for twilight and night signals	V_{in}-1	V_{in}	V_{in}+1	Vdc
Current sense				
Current for beacon sensing 1	0	-	5	A
Current for beacon sensing 2	0	-	10	A
Current for beacon sensing 3	0	-	10	A
Current for beacon relay (at 24Vdc)	-	-	16	A
Current for beacon relay (at 48Vdc)	-	-	5	A
Operating environments				
Temperature	-35	-	+55	°C
Norm	-	66	-	IP