

OBELUX HI-ICAO-200 SERIES MANUAL

High-intensity aviation obstruction light



**ICAO HIGH INTENSITY TYPE A 200,000 cd WHITE
NVG COMPLIANT INFRARED 850 nm**

CONTENTS

1	ABOUT THIS PRODUCT	4
1.1	VERSIONS.....	4
1.2	MAIN FUNCTIONAL PARTS.....	5
2	SAFETY INSTRUCTIONS.....	7
2.1	GENERAL CONSIDERATIONS.....	7
2.2	ENVIRONMENTAL CONSIDERATIONS.....	7
2.3	PERSONAL CONSIDERATIONS	7
3	INSTALLATION.....	8
3.1	DEVICE INSTALLATION.....	8
3.2	WIRING	8
3.2.1	Mains input (AC versions)	9
3.2.2	Mains output (AC versions).....	10
3.2.3	DC input (DC versions)	10
3.2.4	DC output (DC versions).....	10
3.2.5	Alarm Relay/Ext Relay.....	11
3.2.6	RS-485 (Modbus)	11
3.2.7	Chaining lights.....	12
3.2.8	Connection without control panel.....	12
3.2.8.1	Standalone lights	12
3.2.8.2	Master-Slave connection	14
4	OPERATION.....	17
4.1	STAND-ALONE MODE.....	18
4.2	MODBUS MODE	19
4.3	TEST MODE.....	20
4.4	MASTER LIGHT MODE (MASTER – SLAVE FUNCTIONALITY)	21
4.5	HEATER.....	22
4.6	CAUSES FOR ALARMS	22
4.7	ON-BOARD LEDs.....	22
4.8	GPS.....	24
4.9	MAINTENANCE.....	24
4.10	TROUBLESHOOTING.....	24

Changelog

Version	Date	Description	Author
0.1	28.08.2020	Document created	JSi
0.2	07.09.2020	Front page picture changed, updated pictures, removed 60 FPM settings, changed Stand-alone mode settings, added Master light mode	JSi
0.3	09.01.2024	Added light connection pictures.	JSi
0.4	08.11.2024	Updated document	JSi

Acronyms and abbreviations

CCV	Cold climate version
cd	candela
DIP	Dual in line package
FPM	Flashes Per Minute
GPS	Global Positioning System
HI	High intensity
ICAO	International Civil Aviation Organization
IR	Infrared
LED	Light emitting diode
NVG	Night Vision Goggle
PCB	Printed circuit board

1 ABOUT THIS PRODUCT

Obelux HI-ICAO-200 series obstruction LED lights provide 200,000 cd WHITE light. Night Vision Goggle (NVG) compliant infrared light (850 nm) models are also available.

The light operation is based on an embedded microcontroller on the light controller board. All models come with an integrated photocell that can drive the transitions between day, twilight and night modes. Alarm relay, GPS synchronization, fault monitoring and Modbus communication are built-in.

The HI-ICAO-200 series lights support both Stand-alone and Modbus operation. In Stand-alone mode, no external controllers are required to run the product. In most use cases, mounting the standalone aviation obstruction light and connecting power are the only actions needed to operate the light. In Modbus operation, the light is controlled with an Obelux controller as a part of an aviation light system.

1.1 Versions

Order code	ICAO	Output	Operating voltage	GPS	IR	CCV	Photocell and Fault monitoring	Modbus	Horizontal beam*
HI-ICAO-AC-200K-GAM-X-Y	Type A	200,000 cd	100-240VAC	Yes	No	No	Yes	Yes	120°
HI-ICAO-AC-200K-CCVGAM-X-Y	Type A	200,000 cd	100-240VAC	Yes	No	Yes	Yes	Yes	120°
HI-ICAO-AC-200KIR-GAM-X-Y	Type A	200,000 cd	100-240VAC	Yes	Yes	No	Yes	Yes	120°
HI-ICAO-AC-200KIR-CCVGAM-X-Y	Type A	200,000 cd	100-240VAC	Yes	Yes	Yes	Yes	Yes	120°
HI-ICAO-DC-200K-GAM-X-Y	Type A	200,000 cd	20-60VDC	Yes	No	No	Yes	Yes	120°
HI-ICAO-DC-200K-CCVGAM-X-Y	Type A	200,000 cd	20-60VDC	Yes	No	Yes	Yes	Yes	120°
HI-ICAO-DC-200KIR-GAM-X-Y	Type A	200,000 cd	20-60VDC	Yes	Yes	No	Yes	Yes	120°
HI-ICAO-DC-200KIR-CCVGAM-X-Y	Type A	200,000 cd	20-60VDC	Yes	Yes	Yes	Yes	Yes	120°

X:

IO = Including IO Interface
EF = Including Ethernet Interface

Y:

A = Including vertical mounting set
B = Including horizontal mounting set

*Products also available with 90° horizontal beam.

1.2 Main functional parts

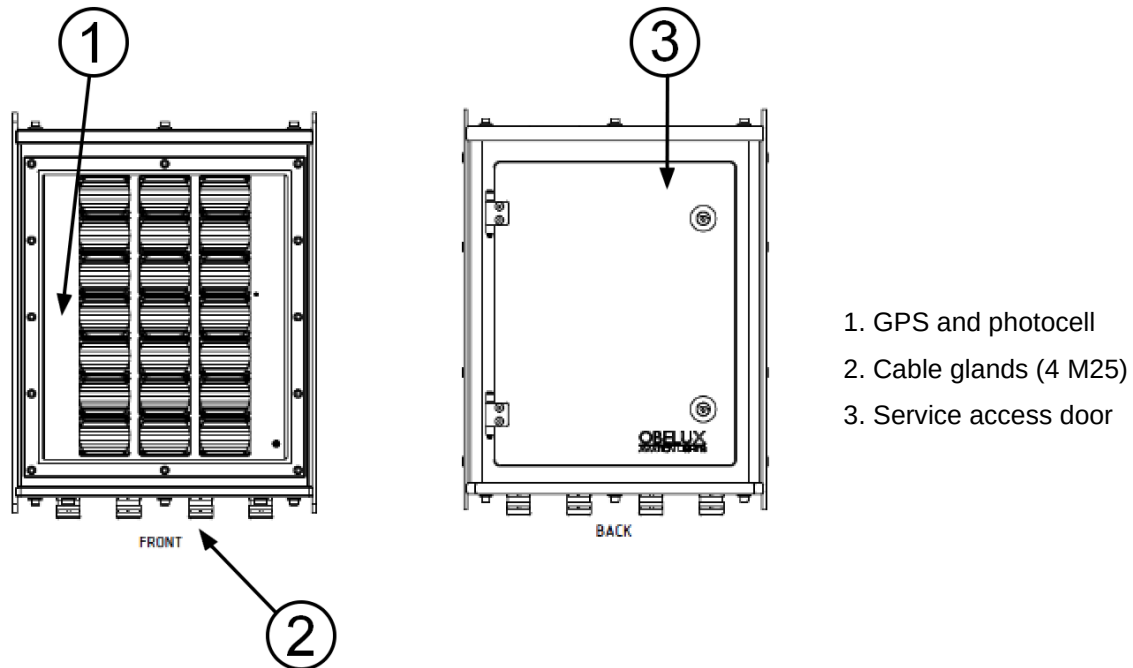


Figure 1: Main functional parts of the light

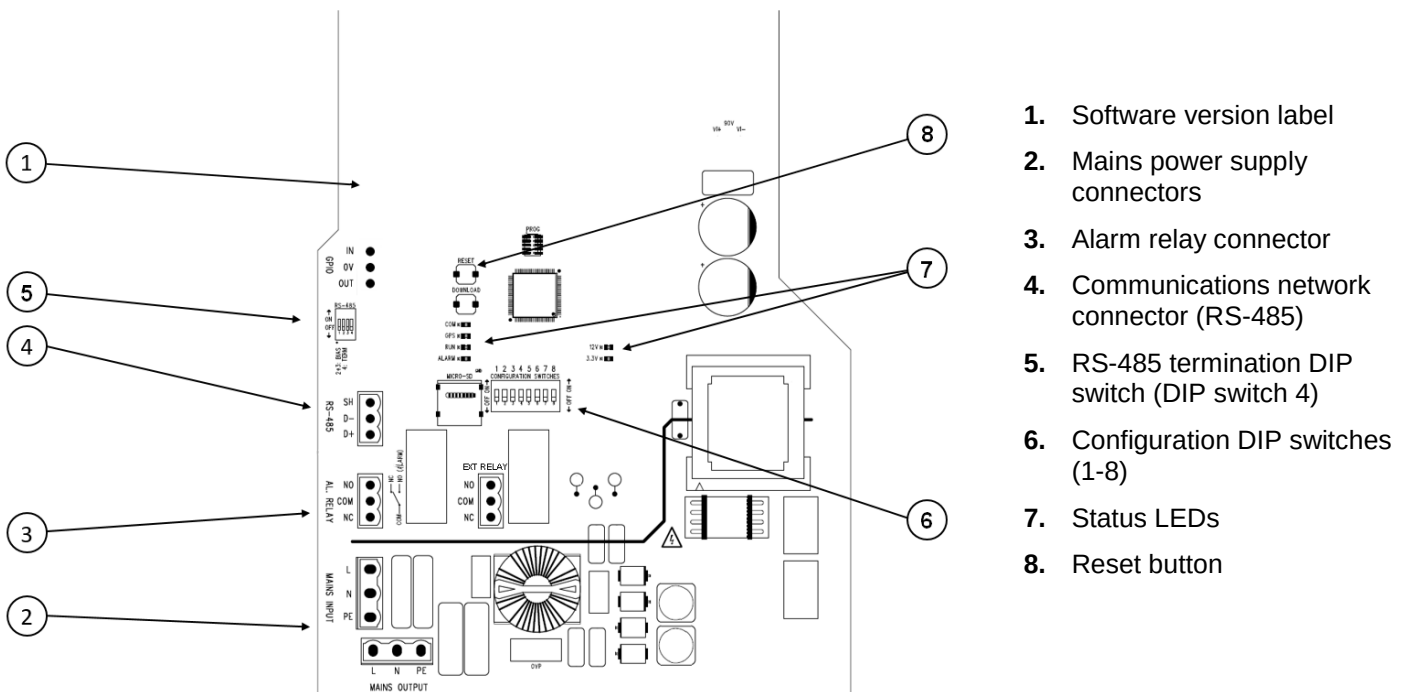


Figure 2: Main circuit board of light

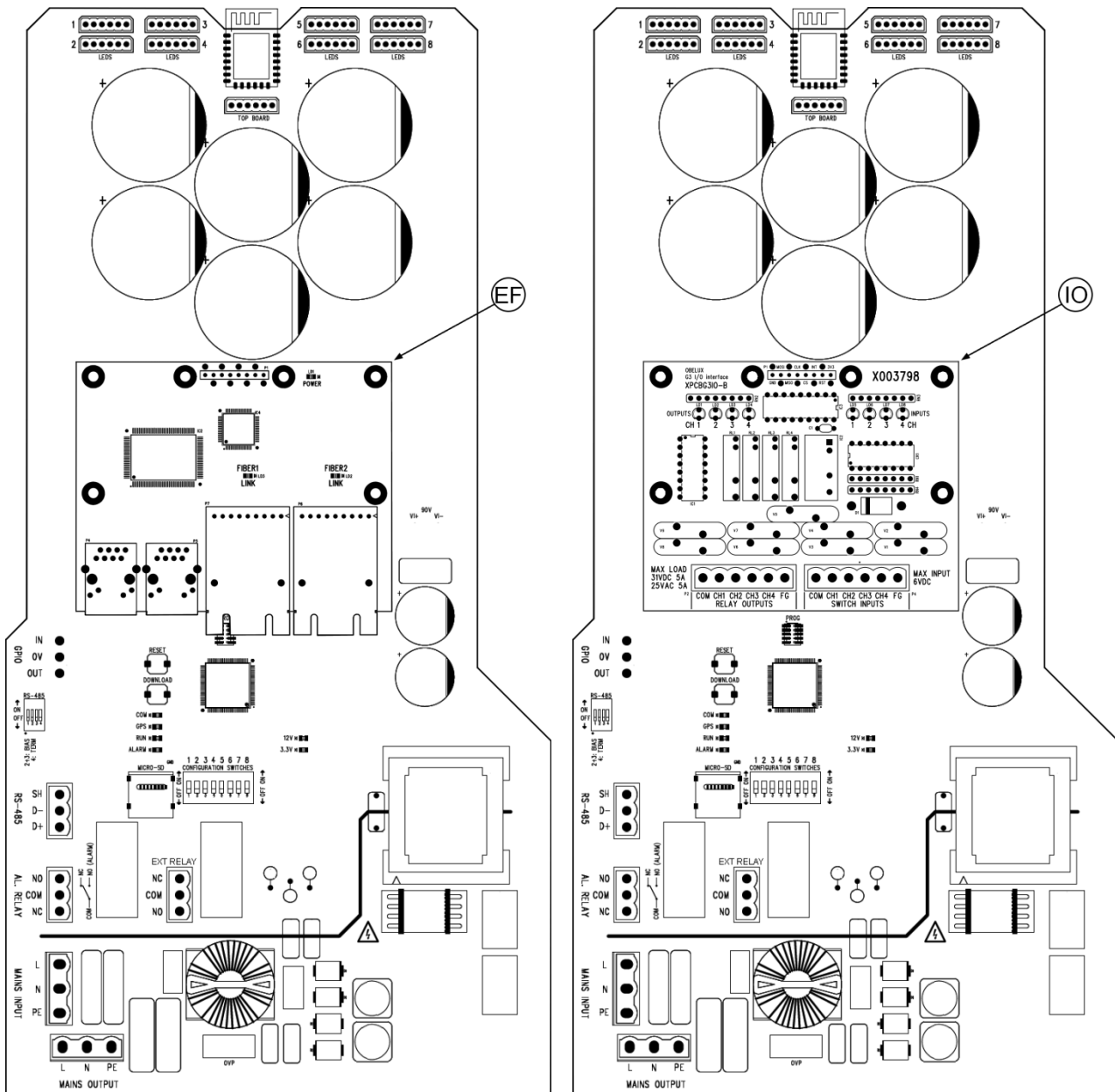


Figure 3: Main PCB with EF and IO add-on cards

- Ethernet Interface (EF) card is an Ethernet switch. It has 2 RJ-45 copper connectors and 2 Fiber SC multimode female connectors that enable connectivity to lights Web server.
- I/O Interface (IO) card provides GPIO functionality. Inputs are rated at 6VDC, relay outputs at 25VAC / 5A, 31VDC / 5A.

2 SAFETY INSTRUCTIONS

In this section, you will find general safety instruction for the device. Please read the instructions carefully before installing or using the device to avoid any personal, environmental or material damages.

2.1 General considerations

Install device observing manufacturer's installation guide.

Use only cables and connectors specified by the manufacturer and in compliance with local electrical code.

Keep your device away from heat sources, dust, smoke or other harmful substances.

Do not modify the device unless otherwise approved by the manufacturer.

If you have any error situation with the device, do not try to fix it by yourself, contact your reseller.

2.2 Environmental considerations

The European Parliament and the Council of European Union issued directive 2012/19/EU to contribute to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the re-use, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials.

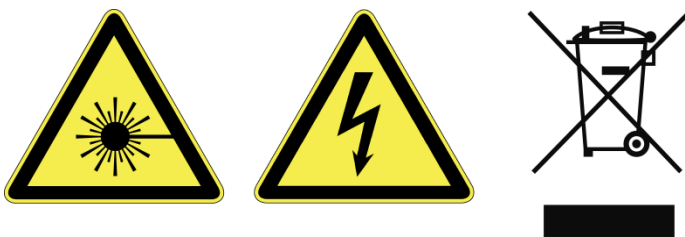
Obelux aviation obstacle light products sold inside European Union can be returned to manufacturer if no local WEEE separate collection and re-use services are available. Please contact Obelux for details.

Obelux does not refurbish returned items but forwards them to authorized WEEE treatment facility.

2.3 Personal considerations

HIGH VOLTAGE! Device contains dangerously high voltage. Do not try to service the device when it is powered on.

Obelux aviation obstruction lights are Class 2M LED devices. This class is safe for accidental viewing under all operating conditions. However, it may not be eye-safe for a person who deliberately stares into the LED beam by overcoming their natural aversion response to the very bright light.



3 INSTALLATION

3.1 Device installation

Mount the obstruction light to selected location. Two mounting sets are available. Level the light using a bubble level if necessary. Tighten nuts and bolts. When the service access door is open, check that there is no inflow of water (incl. hail and snow) into the light. Photocell and GPS should have an uninterrupted view of the sky to work correctly.

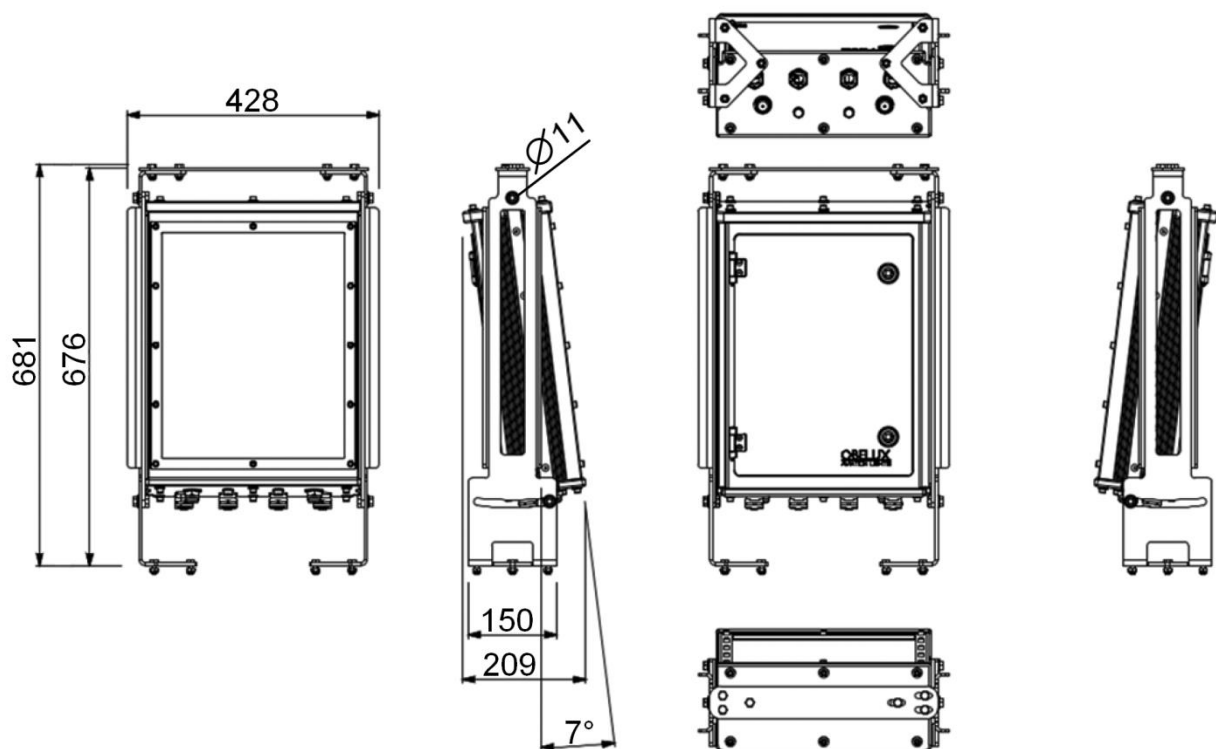


Figure 4: Dimensions with horizontal mounting set (mm)

3.2 Wiring

Route cables using cable glands on bottom of the light. Connect the cable wires securely to appropriate terminal block connectors. There are four (4) cable glands in the light. M25 cable glands accept cables 6-17 mm in diameter. Make sure that all unused glands and gland holes are sealed.

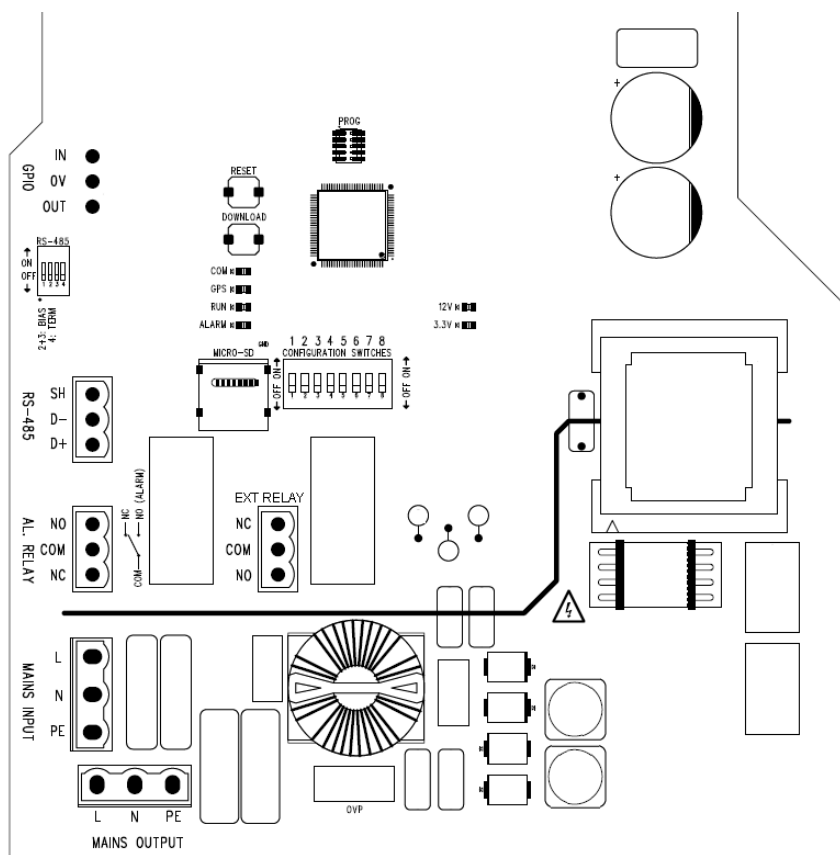
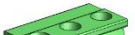


Figure 5: Lights terminals

3.2.1 Mains input (AC versions)

Mark	Description	Information
L	Live terminal	Connect the mains power supply Live wire into this pole.
N	Neutral terminal	Connect the mains power supply Neutral wire into this pole.
PE	Protective earth	Connect the protective earth wire into this pole.

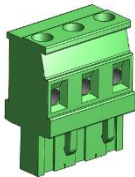
Use single-phase AC power with Protective Earth. Tighten the connector screws using flat-head screwdriver.

Operating voltage	100-240VAC, 50/60 Hz
Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Recommended conductor size	2.5mm ² (14 AWG)
Connector Phoenix Contact GMVSTBR 2,5/3-ST	

3.2.2 Mains output (AC versions)

Mark	Description	Information
L	Live terminal	
N	Neutral terminal	
PE	Protective earth	

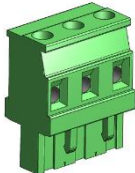
This terminal is used to distribute power from the light to the next light. Tighten the connector screws using flat-head screwdriver.

Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Recommended conductor size	2.5mm ² (14 AWG)
Connector Phoenix Contact GMVSTBR 2,5/3-ST	

3.2.3 DC input (DC versions)

Mark	Description	Information
+	Positive	Connect the power supply positive wire into this pole.
-	Negative	Connect the power supply negative wire into this pole.
GND	Ground	Protective earth

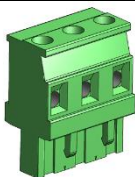
Tighten the connector screws using flat-head screwdriver.

Operating voltage	20-60VDC
Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Recommended conductor size	2.5mm ² (14 AWG)
Connector Phoenix Contact GMVSTBR 2,5/3-ST	

3.2.4 DC output (DC versions)

Mark	Description	Information
+	Positive	
-	Negative	
GND	Ground	Protective earth

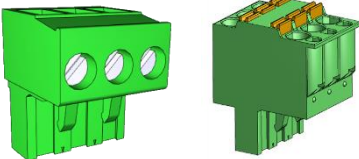
This terminal is used to distribute power from the light to the next light. Tighten the connector screws using flat-head screwdriver.

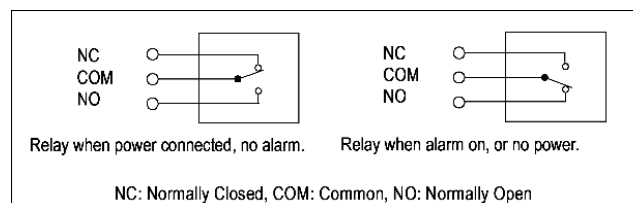
Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Recommended conductor size	2.5mm ² (14 AWG)
Connector Phoenix Contact GMVSTBR 2,5/3-ST	

3.2.5 Alarm Relay/Ext Relay

Mark	Description	Information
NO	Normally Open	Normally open contact; in alarm, connected with COM
COM	Common	Common relay contact
NC	Normally Connected	Normally connected with COM; in alarm, open contact

Unused alarm relay connectors can be left floating, i.e. no wiring there is required. Use the Phoenix Contact TFKC 2,5/3-ST-5,08 connector to distribute alarm signals to next unit if necessary. Ext relay monitors the Alarm relay and alarms if the Alarm relay has a malfunction.

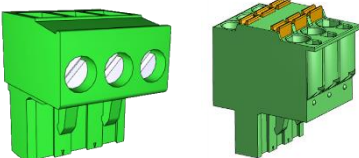
Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Relay ratings	50VDC / 1A, 250VAC / 8A
Connectors Phoenix Contact MSTB 2,5/3-ST Phoenix Contact TFKC 2,5/3-ST-5,08	



3.2.6 RS-485 (Modbus)

Mark	Description	Information
D+	Data +	RS-485 non-inverting pin
D-	Data -	RS-485 inverting pin
SH	Shield	Use shielded cable and connect the shield to the SH pin

The RS-485 network input/output. Unused Modbus connectors can be left floating, i.e. no wiring there is required. Keep cabling as short as possible. Use the Phoenix Contact TFKC 2,5/3-ST-5,08 connector to distribute data signals to next unit if necessary.

Conductor cross-section	0.2mm ² - 2.5mm ² (24-14 AWG)
Recommended conductor size	0.75mm ² - 1.5mm ² (20-16AWG) or CAT cable
Connectors Phoenix Contact MSTB 2,5/3-ST Phoenix Contact TFKC 2,5/3-ST-5,08	

3.2.7 Chaining lights

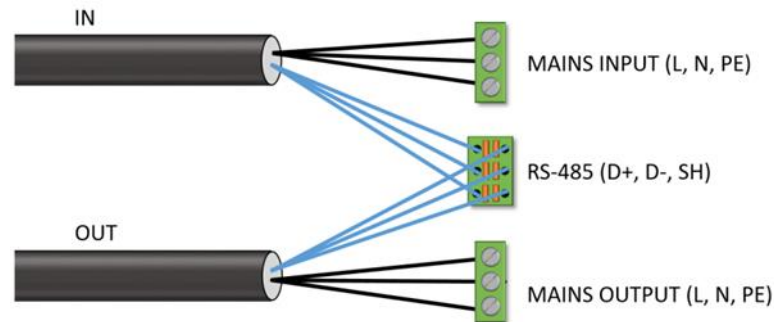
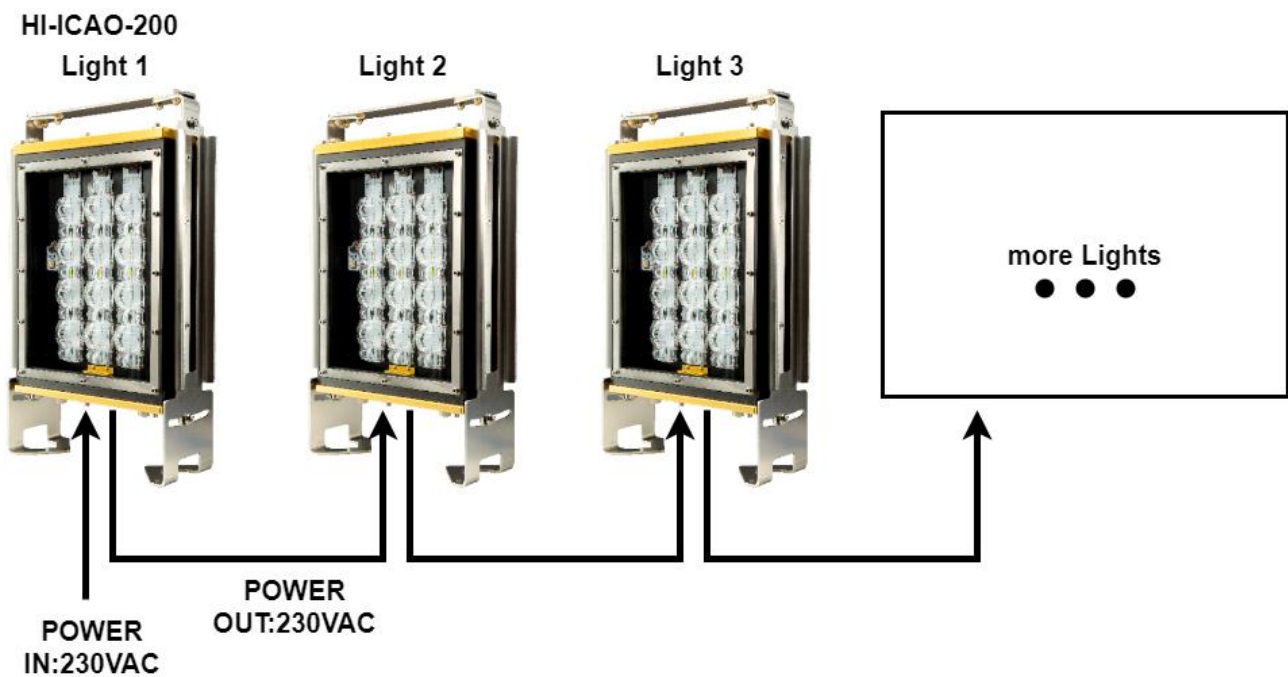


Figure 6: Distributing power and data from a light to the next light using 6 wire cables

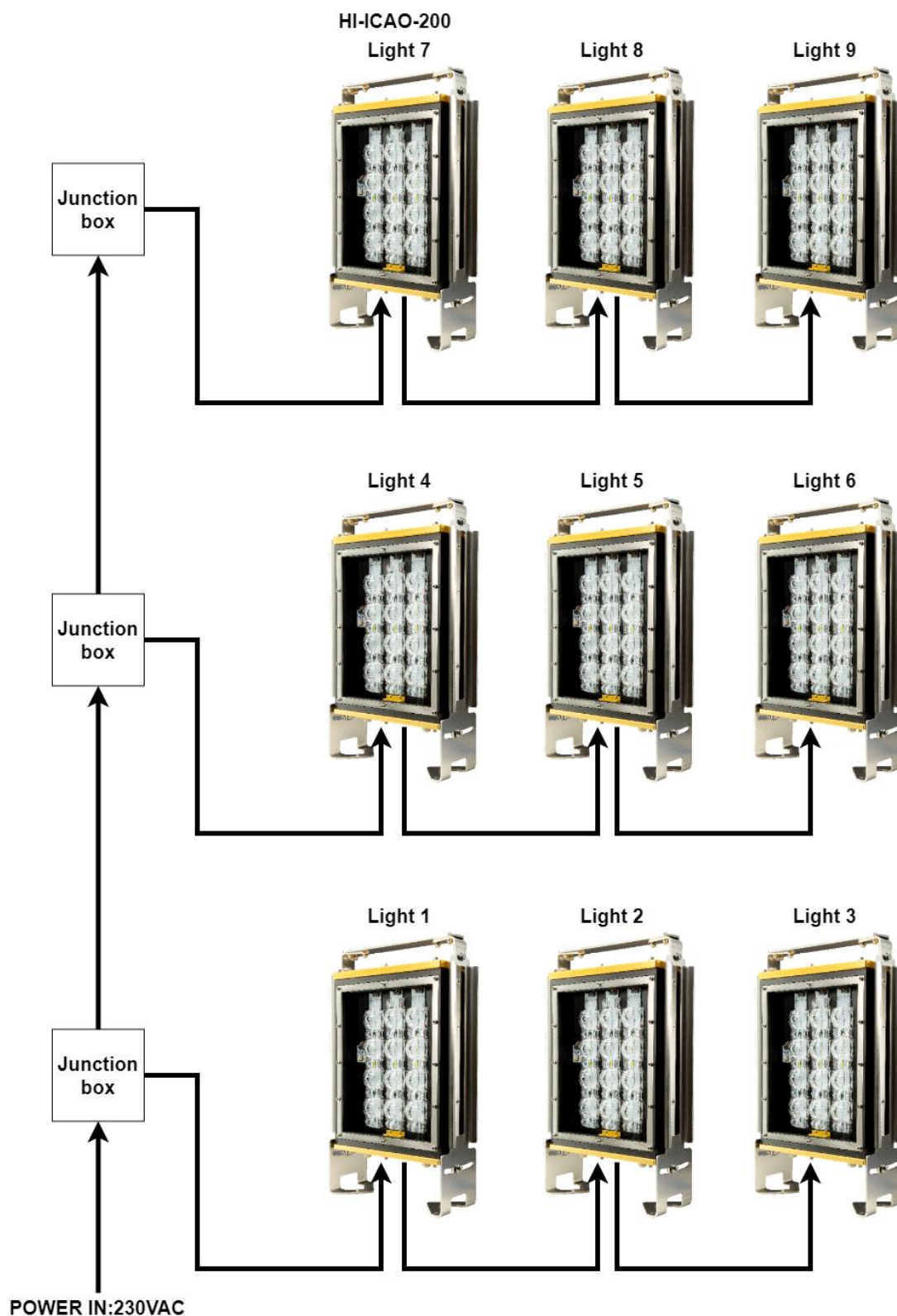
3.2.8 Connection without control panel

The lights can be operated without control panel in Standalone mode, where the lights operate independently or in Master-Slave mode where a Master light controls Slave lights.

3.2.8.1 Standalone lights



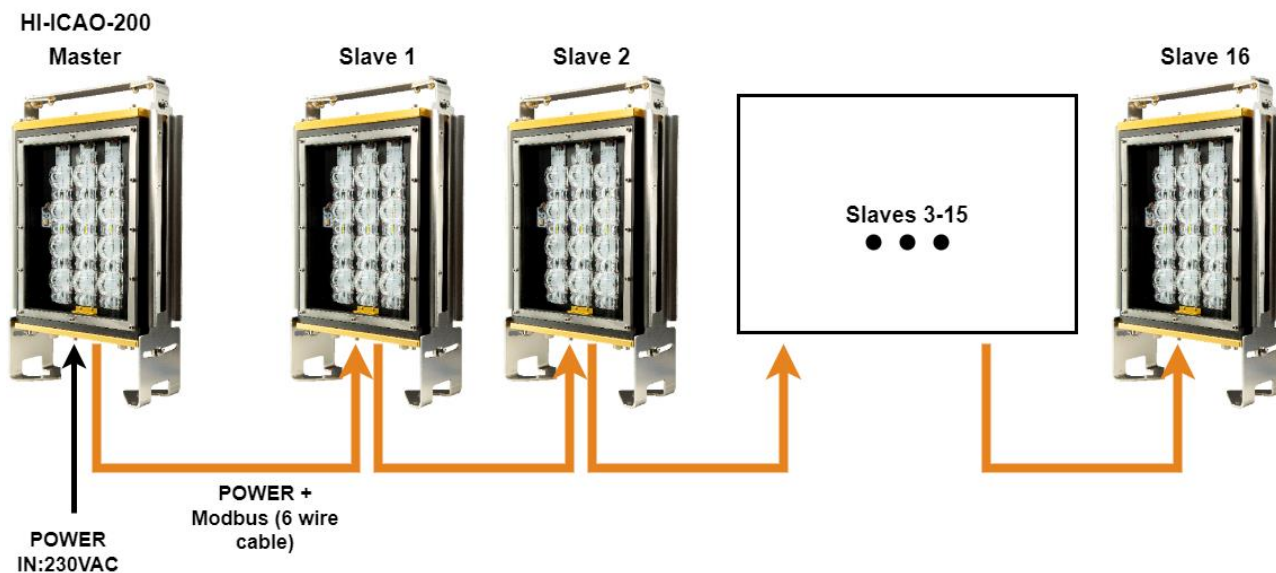
Stand-alone lights connected by chaining (AC lights)



Example: Stand-alone connection with junction boxes (AC lights)

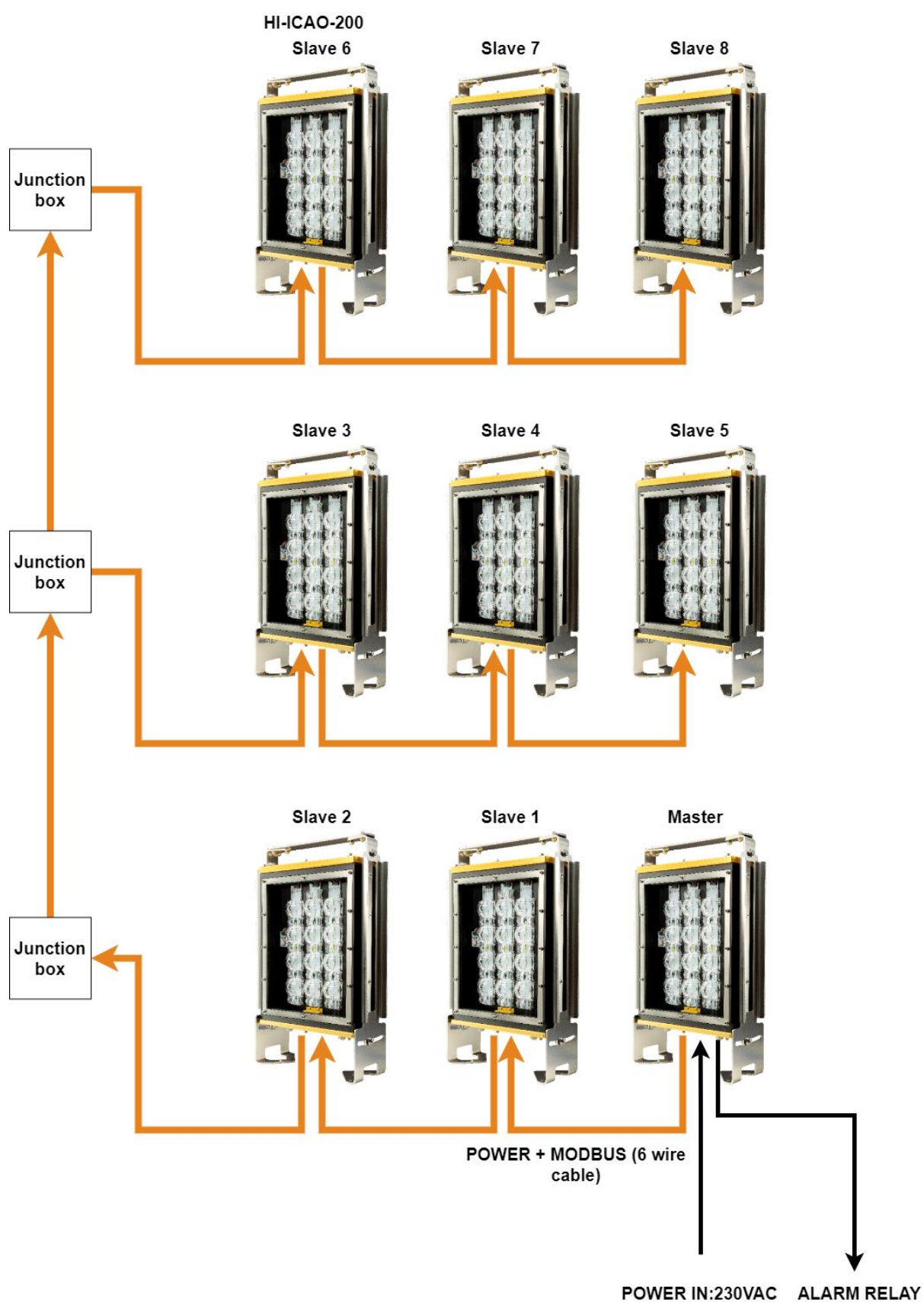
Power is distributed with junction boxes. This is the recommended connection method.

3.2.8.2 Master-Slave connection



Master - Slave connection with 16 slaves (chaining using 6 wire cables)

Power and data are distributed with 6 wire cables to the slaves. Wiring is described in Chapter 'Chaining lights'.



Example: Master - Slave connection with 8 slaves and junction boxes

Power and data is distributed with junction boxes. Alarm relay is wired from the master.

Master light controls and monitors slave lights with Modbus. The Master supports up to 16 slaves.

The master will give an alarm if it detects a fault in any of the slaves. There is no need to wire alarm cables to the slave lights.

If a cable from master to slave or slave to slave is disconnected, the slave(s) disconnected from the master raise an alarm (indicator alarm LED, alarm relay) and continue to operate independently and also the master raises an alarm (indicator alarm LED, alarm relay).

4 OPERATION

Using the configuration DIP switches visible and accessible via service access door opening, configure the desired parameters into the light. The DIP switches are numbered 1-8. Embedded software in the obstruction light reads configuration switches regularly. Configuration change becomes effective within a few seconds.

The light can be configured to different operating modes. Light reset or power recycling is needed when changing between the operating modes.

Stand-alone mode: In this mode, light operation is configured with its DIP switches. No additional controllers are needed. The light will use its internal photocell to determine the time of day (Day, Twilight or Night). The light will change its flashing mode based on photocell data and how the user has configured the light. Lights will synchronize their flashing with the built-in GPS module. After light start-up, it will take some time for the light to acquire a GPS lock.

Modbus mode: In this mode, the light is being controlled with an additional Obelux controller. If connection is lost to the controller, the light will keep working on its own. It will use its internal photocell and GPS to synchronize flashing and determine the time of day. The light will return to normal Modbus operation when the connection to Obelux controller is recovered.

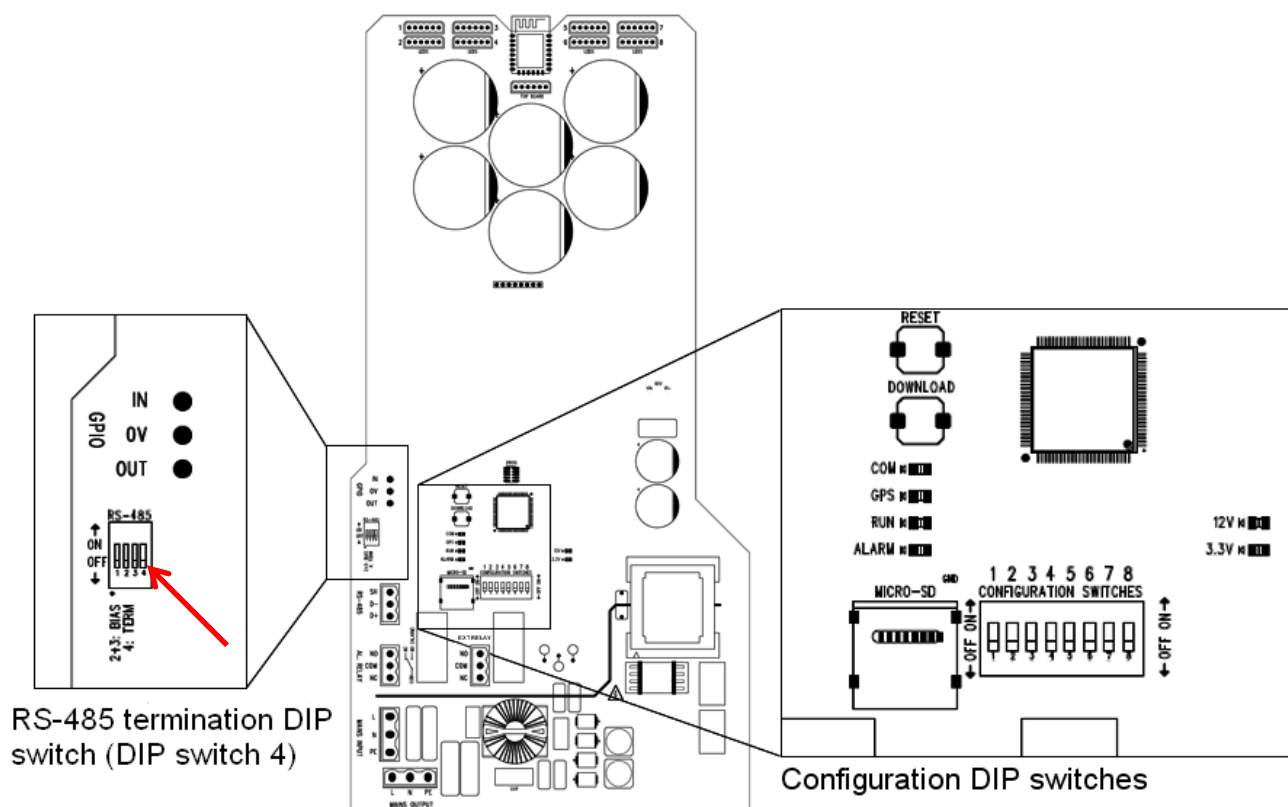


Figure 7: Location of the DIP switches

4.1 Stand-alone mode

Flashing mode of light is selected with DIP switches 1-3. All lights don't have IR LEDs, configurations that use them are therefore reserved for such lights. Photocell limit for the Day mode is 1600 lux and 157 lux for the Night mode unless otherwise specified. Flash pulse length is 205 ms.

DIP switch			Flashing mode		
1	2	3	Day	Twilight	Night
off	off	off	200,000 cd	20,000 cd	2,000 cd white, 205 ms
on	off	off	Reserved		
off	on	off	200,000 cd	20,000 cd	2,000 cd white and infrared, 205 ms
on	on	off	Reserved		
off	off	on	Reserved		
on	off	on	Reserved		
off	on	on	Reserved		
on	on	on	Reserved		

Flashing rate is selected with DIP switches 4-5.

DIP switch		Flash rate (FPM)
4	5	
off	off	20
on	off	30 (Night mode, 54 lux)
		40 (Day and Twilight mode, 645 lux*)
off	on	40
on	on	Reserved

*Photocell limits for time of day changes (Day/Twilight 645 lux, Night 54 lux)

DIP switch 6 sets the operation of IR lights in Night mode. Note: For lights that don't have IR, turn DIP switch 6 off.

DIP switch	Night mode operation
6	
off	IR LEDs follow FPM settings
on	IR LEDs steady burn

With DIP switch 7, the unit can be set to a Master or Slave mode. In Master mode, the unit can control Modbus connected Obelux lights. If not using Master mode, the DIP switch 7 should be off.

DIP switch	Master/Slave mode
7	
off	This device is slave
on	This device is master

RS-485 bus should be terminated with on-board 120 ohm resistors on both ends of the communications bus. Turn on RS-485 termination DIP switch on these devices.

DIP switch 8 selects operating mode between Stand-alone and Modbus. Switch it to off for Stand-alone mode.

DIP switch	Operating mode
8	
off	Stand-alone
on	Modbus

4.2 Modbus mode

Configuration DIP switches 1-5 are used to give the light a Modbus address. Duplicate addresses on the same bus are not allowed. Give each device on the bus a unique address. The addresses need to be set from lowest to highest in order. E.g. if 3 devices are used, they need to be in addresses 1, 2 and 3.

DIP switch					Modbus Address
1	2	3	4	5	
on	off	off	off	off	Address 01
off	on	off	off	off	Address 02
on	on	off	off	off	Address 03
off	off	on	off	off	Address 04
on	off	on	off	off	Address 05
off	on	on	off	off	Address 06
on	on	on	off	off	Address 07
off	off	off	on	off	Address 08
on	off	off	on	off	Address 09
off	on	off	on	off	Address 10
on	on	off	on	off	Address 11
off	off	on	on	off	Address 12
on	off	on	on	off	Address 13
off	on	on	on	off	Address 14
on	on	on	on	off	Address 15
off	off	off	off	on	Address 16
on	off	off	off	on	Address 17
off	on	off	off	on	Address 18
on	on	off	off	on	Address 19
off	off	on	off	on	Address 20
on	off	on	off	on	Address 21
off	on	on	off	on	Address 22
on	on	on	off	on	Address 23
off	off	off	on	on	Address 24
on	off	off	on	on	Address 25
off	on	off	on	on	Address 26
on	on	off	on	on	Address 27
off	off	on	on	on	Address 28
on	off	on	on	on	Address 29
off	on	on	on	on	Address 30
on	on	on	on	on	Address 31

DIP switch	
6	Reserved

DIP switch 7 must be off (Slave mode).

DIP switch	Master/Slave mode
7	
off	This device is slave
on	This device is master

The light is in Modbus mode when DIP switch 8 is on. Light is being controlled with an Obelux controller.

DIP switch		Operating mode
8		
off		Stand-alone
on		Modbus

RS-485 bus should be terminated with on-board 120 ohm resistors by turning on the RS-485 termination DIP switch on devices at both ends of the communications bus.

4.3 Test mode

To enter test mode, power off the light and set DIP switches 7 and 8 on. The light will enter test mode when power is turned on. To leave the test mode, power off the light and configure it to normal use. Then power on the light.

DIP switch		Test mode
7	8	
on	on	Test mode enabled.
off	off	Test mode disabled.

Light mode is selected with DIP switches 1-2. There is normally a delay when changing time-of-day modes (Day, Twilight and Night) based on photocell data. Using accelerated photocell mode will decrease the delay to a couple of seconds.

DIP switch		Light mode
1	2	
off	off	Accelerated photocell behavior
on	off	WHITE light only (5% intensity)
off	on	Reserved
on	on	IR light only

DIP switch	
3	Reserved

Flashing rate is selected with DIP switches 4-5.

DIP switch		Flash rate (FPM)
4	5	
off	off	Steady
on	off	20
off	on	40
on	on	Reserved

The light can be dimmed by using DIP switches 6 and 7. Dimming is lights luminosity produced at lower levels of lights power. Note that the light stays in test mode despite DIP switch 7 is turned off.

DIP switch		Dimming
6	7	
off	off	100% power
on	off	30% power
off	on	100% power
on	on	10% power

4.4 Master light mode (Master – Slave functionality)

HI-ICAO-200 series light can be set as a master of a network of Modbus connected Obelux lights (slaves). Only one light shall be the master in the network. Master unit broadcasts time and illumination data to slave units via RS-485 / Modbus. Time is typically received from GPS and illumination information comes from photocell. If the information flow from the master unit to slave units is interrupted, the slave units will use local photocell setting and local time in their operations. As the data flow resumes, the slaves automatically synchronize themselves with the master unit.

Connect the lights as shown in 'Master - Slave connection' chapter.

By using configuration DIP switches, set a light to master mode by switching its DIP switch 7 on. Set DIP switch 7 off in the slave lights to put them to slave mode.

DIP switch	Master/Slave mode
7	
off	This device is slave (slaves)
on	This device is master (master)

Set the master light to stand-alone mode and the slave lights to Modbus mode with DIP switch 8.

DIP switch	Operating mode
8	
off	Stand-alone (master)
on	Modbus (slaves)

Use configuration DIP switches 1-4 to give the slave lights Modbus addresses. Refer to Modbus address DIP switch configuration table in the 'Modbus mode' chapter. Duplicate addresses on the same bus are not allowed. Give lights connected to the same communication bus an address starting from one. RS-485 bus should be terminated with on-board 120 ohm resistors by turning on the termination DIP switch on devices at both ends of the communications bus.

Additionally, software configuration is necessary.

In the master light, use lights Web server interface or light configuration tool to configure the following settings:

- ▶ Settings -> Num. Slaves
Set the number of slave lights.
- ▶ Settings -> Slave Options
 - Transmit Behavior Bits
- ▶ Settings -> Slave Behavior
 - LI Red Twilight
Low intensity lights have red light on during Twilight.
 - MI Red Twilight
Medium intensity lights have red light on during Twilight.
 - HI Red Twilight
High intensity lights have red light on during Twilight.
 - LI Flash (visible)
Low intensity lights flash visible light.
 - LI Flash (IR)
Low intensity lights flash infrared light.
- ▶ Settings -> Options2
 - Transmit FPM (Master mode only)
 - Hot-Spare function
- ▶ Settings -> Slave Timeout
How long to wait for answer from Modbus slave units.

In the slave lights, use lights Web server interface or light configuration tool to configure the following settings:

► Settings -> Options2

- Do not use own photocell (will use default ToD (time-of-day), if no master connection)
- Use Default FPM if master connection lost
- Failsafe FPM when no Master connection

Then reset the lights for the settings to take effect.

The master can monitor the slave alarms from:

► Modbus -> Alarm State

Currently active alarm sources

- B14: Slaves

And:

► Status -> Slave Alarms

Currently active slave alarms are displayed.

4.5 Heater

Cold climate version models have an integrated 100 W heater element below the main PCB. The heater turns on when the lights internal temperature drops below 10 °C. The heater reaches 100% power when the temperature drops below 5 °C and turns off after the temperature rises above 10 °C. In cold climates, the heater is meant to evaporate moisture and keep the light thawed from snow and ice.

4.6 Causes for alarms

The following events can cause an alarm.

- Internal hardware or power failure
- Light source failure, including decreased intensity below rated level
- Loss of GPS synchronization signal or GPS module failure
- Incorrect photocell operation

The alarm LED will turn on and alarm relay will activate.

4.7 On-board LEDs

Status indication LEDs are located on the controller board. Some of the status indicators have three operating states (off, lit and flashing).

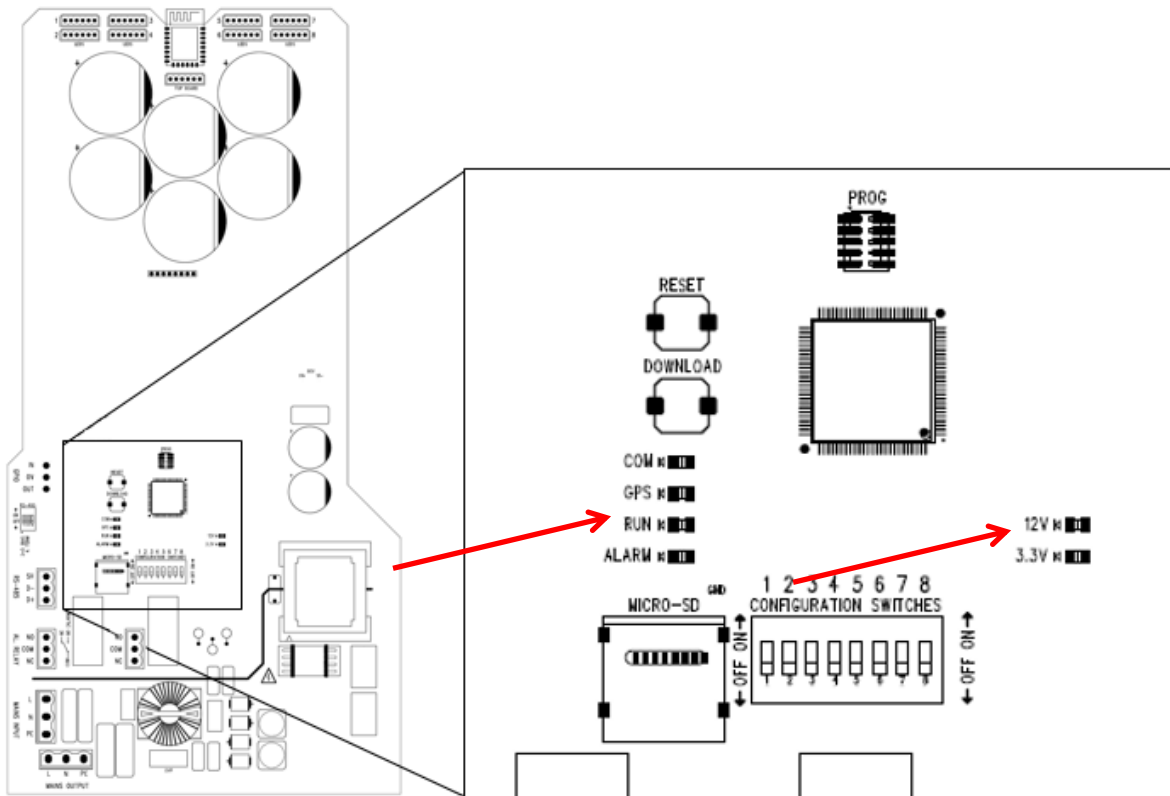


Figure 8: Status LEDs

LED	Description
3.3V	Internal operating voltage (GREEN) OFF: Power off ON: Light is powered
12V	Internal operating voltage (GREEN) OFF: Power off ON: Light is powered on
COM	Communication (GREEN) OFF: Waiting for external signals FLASHING: Master-slave communications occurring on the network
GPS	GPS (GREEN) OFF: No GPS fix FLASHING: Light GPS module has fix on GPS place and time. Light is not yet fully synchronized. ON: Light GPS module has fully resolved the UTC time. It may take several minutes for the GPS module to receive the necessary data.
RUN	Synchronization (GREEN) OFF: All outputs are off ON: At least one output is active. RUN LED is flashing at same time and frequency as the aviation light.
ALARM	Alarm indicator (RED) OFF: Normal operation, no alarms ON: Active alarm condition

4.8 GPS

In stand-alone mode, lights will automatically synchronize their flashing with their built-in GPS module. After light start-up, it will take some time for the light to acquire a GPS lock, because the light needs a signal from multiple GPS satellites. GPS receiver may take up to 30 minutes to obtain correct time data from GPS satellites.

4.9 Maintenance

These lights are generally maintenance free.

Maintenance activities:

- Periodically check the lights for dirt build up on the glass and humidity inside.
- Check power cable degradation. This degradation negatively impacts the electrical and mechanical properties of the cable. It might be detectable as an unexpected voltage drop at the lights power input.

4.10 Troubleshooting

Light doesn't start

- No power. Check that the 3.3V and 12V status LEDs are illuminated.
- Incorrect configuration. Check DIP switches; make sure Test mode is turned off.
- Loose wires. Check that all wires are properly connected in terminal block connectors.
- Do not exceed maximum operating voltage. Mains power supply input is protected with overvoltage protection circuit that is tuned to stated operating voltage range.

No Modbus data connection to Obelux controller

- Check DIP switch settings. Check that light has a correct Modbus address and that there are no conflicting addresses. Make sure the light is configured to Modbus mode (DIP switch 8 ON).
- Multiple masters on the same bus. Modbus allows only one master. Make sure that there is only one master per bus. All other devices on the bus must be configured to Modbus slave mode.
- Too many RS-485 termination resistors (120 ohm) on the same RS-485 communication bus. The bus should be terminated with on-board 120 ohm resistors on both ends of the communications bus only.
- Check Modbus wiring.
Check for proper bus termination and circuitry by using a multimeter. Use the multimeter in resistance (ohm) measurement mode. The system shall be unpowered (power off) and RS-485 termination resistors shall be on at the bus ends. Measuring between D+ and D- should read 60 ohm for correctly working cable. Open circuit (cut wire) should read 120 ohm. A short circuit reads ~0 ohm.
The bus has polarity, meaning that the D+ and D- wires of the Modbus cable must not be switched on the cable connectors. Use cable with marked wires for identification.

Light does not change modes between day, twilight and night

- Check that the photocell has an uninterrupted view of the sky.
- Check that there are no external light sources that interfere with the photocell.
- Photocell is sampled once in a minute and read values are averaged to avoid sudden state changes. Unless test mode is enabled, it takes approx. three (3) minutes to change system state between Day, Twilight and Night.

Light does not flash in sync

- The GPS antenna needs a non-blocked view to GPS satellites in orbit. After start-up, GPS receiver may take up to 30 mins to obtain correct time data from GPS satellites. This operation requires data from several GPS satellites.