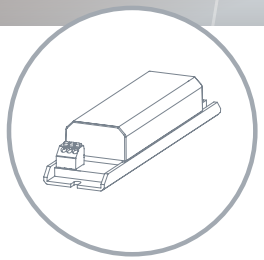
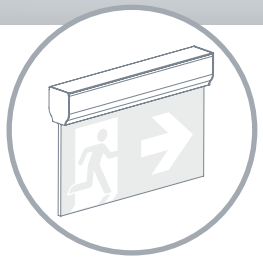
HYBRYD

LIGHTING THE WAY TO SAFETY

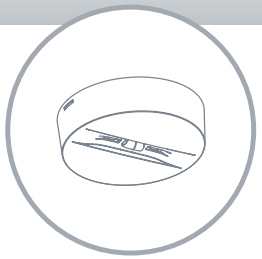
EMERGENCY
LIGHTING SYSTEMS



CONTROL UNITS,
MODULES, ACCESSORIES



EXIT SIGN
LUMINAIRES



EMERGENCY
LUMINAIRES

COMPANY PROFILE

Management System ISO 9001:20015
TÜVRheinland CERTIFIED
www.tuv.com ID 9105017689

CNBOP-PIB

Hybryd – manufacturer of emergency lighting systems has full access to the constructional – production infrastructure with automatic electronic assembly (SMD line) and also to the electric and mechanical service stations.

The devices produced are of the highest quality, and the company provides both, efficient guarantee, as well as post-guarantee service.

HYBRYD was established in 1986 under the name: Przedsiębiorstwo Projektowania i Produkcji Urządzeń Elektronicznych Hybryd Sp. z o.o. with its registered office in Zabrze. The Company manufactured thick-layered hybrid systems for medical equipment. Afterwards, the offer was extended to signalisation devices in the railway sector and then for the automotive sector.

In 1996, the Company's office was transferred to Pyskowice near Gliwice. The machine park was expanded. The manufacturing technology was extended with systems assembly on PCB boards.

Since 1997, the range of the products manufactured was extended with electronic systems for supplying light emitting diode fluorescent lamps, i.e. electronic ballasts and emergency modules. In the course of the on-going improvement of our products, the emergency lighting power supply systems were introduced to manufacturing, equipped with digital interface. Most production is based on our own designs prepared in the designing department.

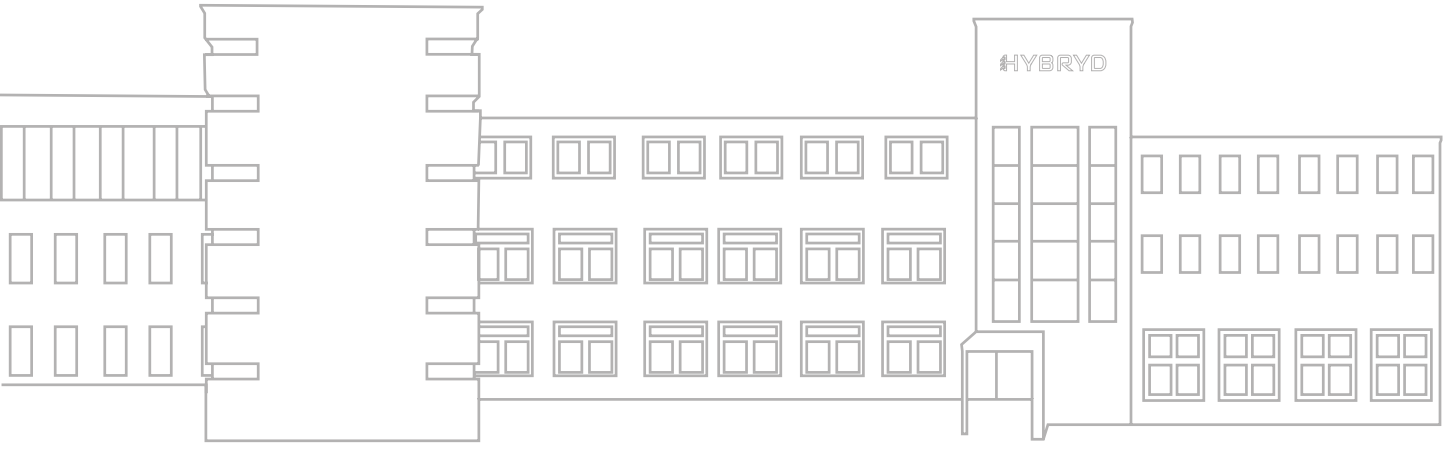
The high quality of products and services is acknowledged by the integrated management system certificate consistent with ISO 9001:2015.

In 2010, we handed over a building for the use by the Research and Development Centre and rooms for the production of new lighting luminaires with LED light source. Since 2010, we have implemented successfully a few projects co-financed by the Ministry of Regional Development from the EU's funds as part of the Innovative Economy Operational Programme.

In 2011, we elaborated and implemented the production of the family of post-lighting emergency luminaires with LED light source. Hybryd is a Polish manufacturer. All the production is carried out in Poland.

Since 2018 we have been implementing the project titled "The elaboration of a new type of energy effective system of dynamic emergency lighting luminaires using wireless communication" co-financed from the funds of the European Regional Development Fund as part of Activity I.1 "Designs of B+R Enterprises" Sub-Activity I.1.1.

"Industrial tests and development works implemented by enterprises" of the Smart Development Operational Programme for the years 2014-2020.



REGULATIONS AND STANDARDS

Emergency evacuation lighting should be designed in all the buildings where voltage loss in the electric power supply network may cause human life or health hazard, serious environment hazard and substantial economic losses.

- The Ordinance of the Ministry of Infrastructure of 12 April 2002 on the technical conditions which buildings and their location should satisfy (Journal of Laws No 75, item 690, as amended), amended by Journal of Laws of 2017, item 2285
- The Ordinance of the Minister of Internal Affairs and Administration of 7 June 2010 on the fire protection of buildings, other structures and areas, and terrains (Journal of Laws, No 109, item 719), amended by the Ordinance of 11 January 2019
- The Ordinance of the Minister of Internal Affairs and Administration of 20 June 2007 on the list of products used for ensuring public safety or health, life and property protection, as well as rules for issuing approvals for the use of such products (Journal of Laws of 2007, No 143, item 1002) amended by the Ordinance of 27 April 2010 (Journal of Laws of 2010, No 85, item 553).

A group of standards related to the technical parameters of luminaires, installations and appliances supplying the emergency lighting with power:

- EN 1838:2013-11 (E)
  Use of lighting. Emergency lighting
- EN 50172:2005
  Emergency evacuation lighting systems
- EN IEC 62485-2:2018
  Systems of testing emergency evacuation lighting supplied with power from batteries
- EN 60598-2-22:2015-01
  Lighting luminaires – Part 2-22. Specific requirements.

Lighting luminaires for emergency lighting:

- EN 50171:2007
  Central power supply systems
- EN 50272-2:2007
  The requirements of safety and installation of secondary batteries – Part 2. Stationary batteries.

The group of standards related to labelling and safety symbols:

- PN-N-01256-4:1997
  Safety signs. Technical fire protection measures
- PN-N-01256-5:1998
  Safety signs. The rules of placing safety signs in escape routes and fire routes
- EN ISO 7010:2020-07
  Graphical symbols – colours.
  Safety colours and safety signs.

In accordance with law, emergency evacuation lighting must be used:

1. In the following rooms:
   - The auditorium of cinemas, theatres and concert halls as well as other entertainment halls
   - Conference halls, reading rooms and entertainment premises as well as sports halls intended for more than 200 participants
   - Exhibition halls at museums
   - Covering the net area exceeding 1 000 m^2 in garages lit with artificial light only
   - Covering the net area exceeding 2 000 m2 in public utility buildings, collective residence buildings and manufacturing and warehousing buildings,
2. On escape routes:
   - From rooms mentioned in point 1
   - Lit with artificial light only
   - At hospitals and other buildings intended mostly for use by people with hindered mobility capability
   - In high and high-altitude buildings of public utility and collective residence.
3. Temporary buildings, provided that they are dedicated to entertainment purposes or other people gatherings.

TERMINOLOGY

In the field of emergency lighting acc. to EN 1838

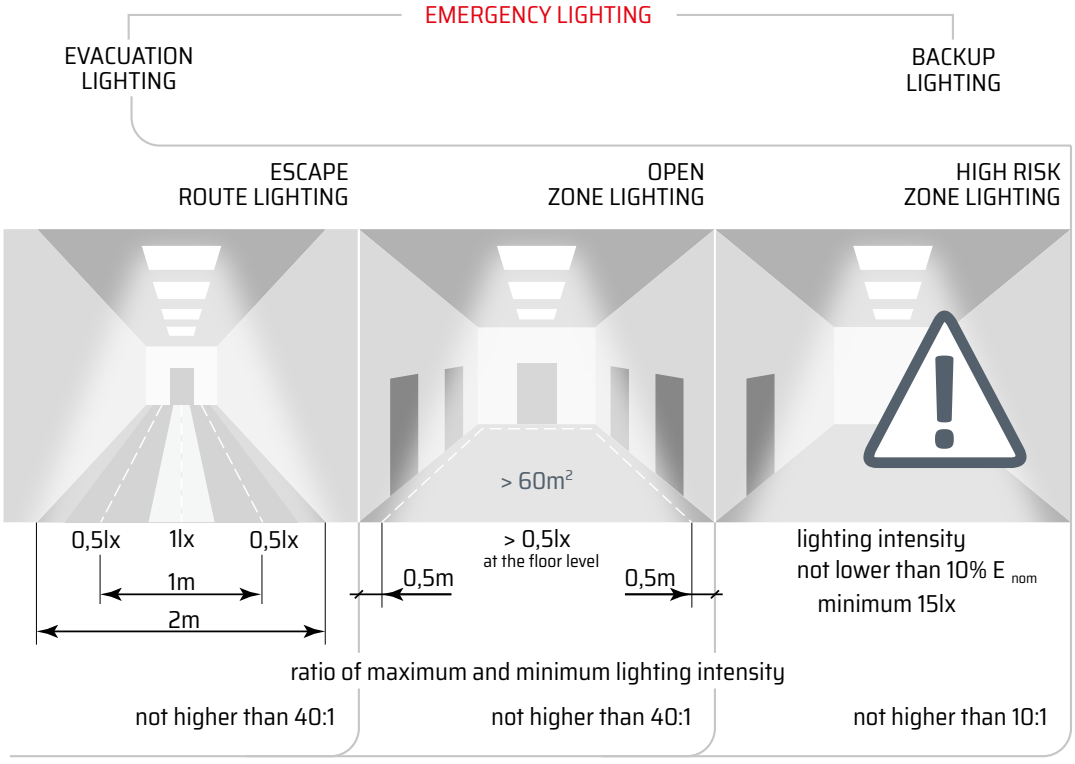
Emergency lighting – is intended for use at the time of the interruption of supplying power to luminaires for the basic lighting; this is why emergency lighting luminaires are supplied with power from the source independent from the power supply source of basic lighting luminaires.

Emergency evacuation lighting – the overall purpose of emergency evacuation lighting is to ensure safe exit from a staying place during the interruption of normal power supply. The purpose of escape route lighting is to enable safe exit from places where people stay through the creation of visibility conditions enabling the identification and use of escape routes and easy localisation and use of fire and safety equipment.

Open zone lighting – the purpose of open zone lighting (preventing panic) is lowering a panic risk and enabling safe movement of people towards escape routes through ensuring visibility conditions enabling reaching a destination from which an escape route may be recognised. It is recommended that escape routes or open zones are lit as a result of the incidence of direct light on the working plain and it is recommended to light obstacles at the height up to 2m above this plain.

High risk zone lighting – the purpose of high risk zone lighting is increasing the safety of people participating in a possibly dangerous process or in a possibly dangerous situation, and enabling proper finalisation of activities in the manner which is safe to the people staying in such a zone.

Here, we should mention **supporting techniques**, which used appropriately in many buildings may improve significantly evacuation effectiveness, at the same time the safety of people staying in such buildings. One of such techniques are **dynamic** systems of evacuation lighting.



EMERGENCY LIGHTING DESIGNING

Guidelines for emergency lighting design.

Step 1. How to indicate points where lighting is required?

We find critical points in a building, where in conformity with the standard, evacuation luminaire must be placed. The most important ones are presented in illustrations (see page 5). Apart from the above ones, the following should be lit: places outside and near each final exit, staircases, lifts, underground car parks, parking lots, shelters for the disabled, fire equipment storage places, first aid points, building control units, and even toilets and other sanitary rooms above 8m^2.

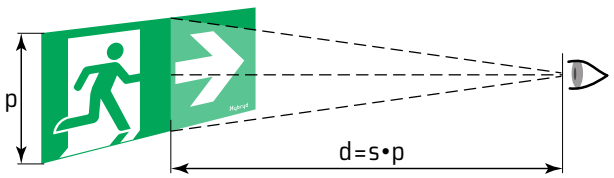
Step 2. How to consider photometric requirements in order to optimise the cost of lightening-up luminaires?

We check the photometric requirements of escape routes and open surfaces. Do not forget that each room should include at least 2 luminaires. With the escape routes determined and open surfaces and escape routes areas measured, we may search for the best solutions possible.

Programmes supporting lighting designing by means of photometric solids, quantity of lumens for a given luminaire and maintained factor allow to determine the spaces of distributing lightening luminaires.

Step 3. How to check the visibility of evacuation signs?

We make sure whether evacuation signs on directional luminaires have proper dimensions. This activity, although it may seem insignificant, is a necessity in terms of the abundant availability of cheap products. The shape of evacuation signs include only square or rectangular with the sides ratio 1:2 and 1:3. Their colours include RAL6032 – green safety colour and AL9003 – contrasting white colour. The luminance of each coloured part of the safety sign should be at least 2 cd/m2 in all the visibility directions important for safety. Average visibility of directional luminaire is approx. 30 m.



s = **100** for signs backlit from the outside
s = **200** for signs backlit inside

NOTE! Spaces provided in marketing materials of many manufacturers do not consider the MF, providing parameters or 100%. The MF considered during designing should be approx. 75-85%.

Step 4. How to assess the functionality and effectiveness of emergency luminaires?

First of all, make sure that emergency lighting luminaires will satisfy the requirements of the standards in terms of the following functionalities:

- Emergency luminaires with independent power supply should be supplied with the integrated testing appliance.
- In order to simulate basic power supply failure, it must be possible to test emergency lighting luminaires without power deactivation.
- Emergency evacuation lighting must activate not only in the case of total damage of basic lighting power supply but also in the situation of the local damage, such as the end circuit damage.
- Due to the requirements of EN 50172:2005P Standard, at least once a year, lighting time must be inspected, and once a month, the functionality of all the emergency lighting luminaires must be tested.

In the offer for low and medium-cubic capacity buildings, two types of evacuation luminaires prevail, i.e. equipped with a test press button, which is the most popular type of emergency lighting and luminaires conducting automatic tests owing to the microprocessor. The option with a test press button is an inexpensive solution but there are no more assets. First of all, hardly anyone remembers to test the luminaire effectiveness once a month, and the annual testing of the lighting time of each of a few or several luminaires may need even a few days for one tour.

In situations when a building is too small for using the integrated system of emergency lighting luminaire supervision (too expensive), the best solution are luminaires with individual power supply and self-testing module (on the market it functions under the name of luminaires with autotest - AT).

Luminaires with AT usually have two diodes. If a luminaire is in a working order, a green diode lights, if something is wrong, a red diode goes on. The colours of diodes are clearly visible. All the tests are carried out automatically. So we can say that this is a solution consisting in buying, hanging and forgetting. Luminaires with AT also have microprocessors which regulate the charging current what protects batteries against damage. It means that even at 20% difference in price in relation to luminaires with A test press button, this solution is only seemingly less economical.

The replacement of batteries often costs as much as 30% of the luminaire value – improper manual testing shortens the battery lifespan.

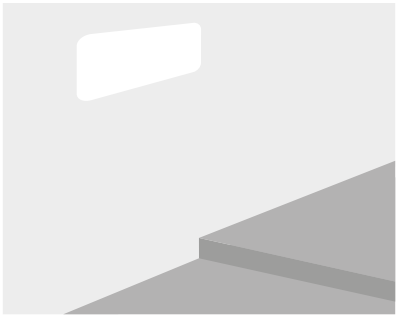
It is also worth remembering about LED solutions which are more frequently used in direction luminaires. The assessment of the effectiveness of luminaires depends mostly on the quantity of open spaces and escape routes needed for normalised lighting. A currently prevailing solution, which has developed in the recent years, are lightening-up luminaires equipped with POWER LEDs. Owing to this solution, it is now a common practice to resign from emergency modules which were used for the exchange of ordinary luminaires with evacuation lighting.

The benefits arising from the use of allocated emergency lighting luminaires in the POWER LED version include:

- Lower quantity of luminaires
- Lower energy consumption
- Higher lifespan of light source
- Allocated luminaires are characteristic for a repeatable installation, whereas many various luminaires were subject to modules what complicated the implementation and servicing.

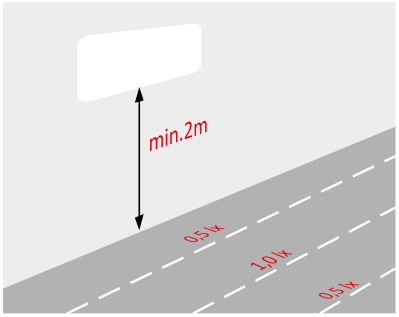
Location of escape route luminaires
based on the following standards:
EN 1838:2013, EN 50172:2005P.

„Near" – no farther than 2 meters
in a horizontal line

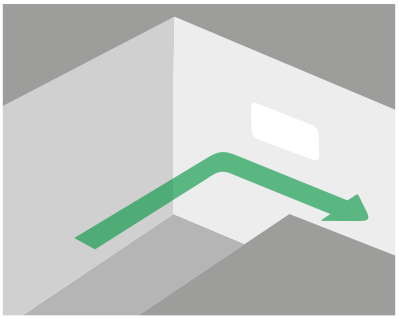


Near each change
in ground level

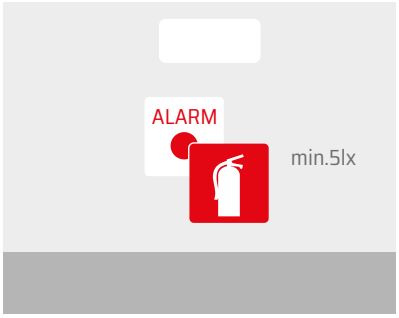
Near each first
aid point



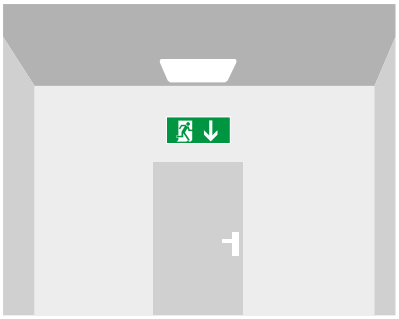
In the escape route axis – intensity of the
evacuation lighting must be min. 1 lx



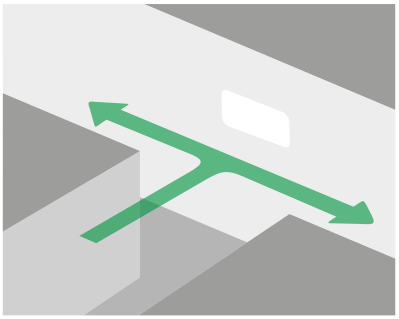
At each
direction change



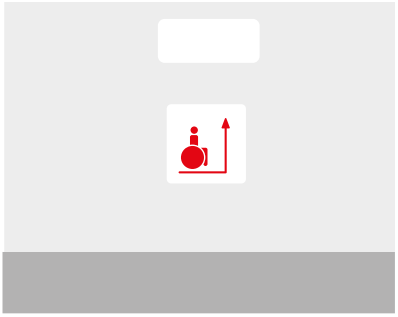
Near each fire aid appliance
and alarm press button



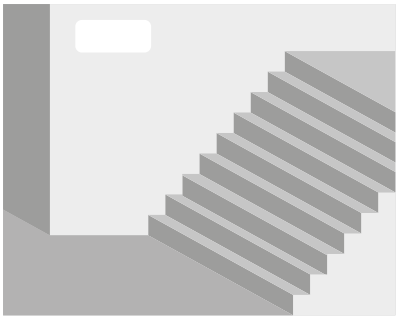
At each exit door intended
for evacuation exit



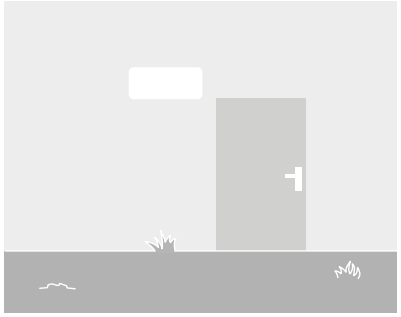
At each
corridors crossing



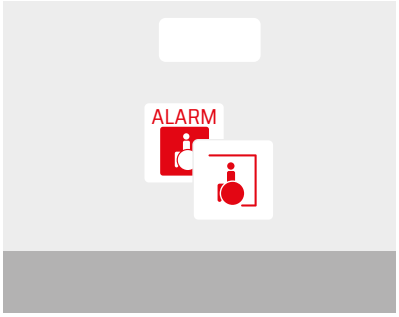
Near evacuation equipment
for the disabled



Near stairs so that
each step is lit directly



Outside and near
each final exit



Near sheltering places and emergency
points/press buttons for the disabled

FEATURES OF HYBRYD LUMINAIRES

Basic information on operation, power supply and testing of HYBRYD luminaires.

OPERATION STATES

Luminaires can work in one of three states:

- **Basic** – with the presence of proper basic power supply voltage. Applies to all the luminaire types
- **Emergency** – after the loss of basic power supply voltage, it is switched to emergency power supply. Applies to all the luminaire types
- **Fire mode** (hazards) – only after receiving an instruction from the control unit. Applies to dynamic luminaires.

OPERATION MODES

Depending on the luminaire structure:

- Maintained, switch-mode (**SM**) – light source is active in the basic mode and in the emergency mode. The central unit may control the operation of the light source
- Non-maintained (**NM**) – a light source is active only in the emergency mode. The luminaire remains dark in the basic mode
- Night (**N**) – the control unit controls the operation of the light source in the basic mode. The light source is activated always in the emergency mode.

TYPES

Depending on the purpose, we differentiate 3 types of emergency luminaires:

- **Exit sign** – they indicate evacuation direction, they have a pictogram consistent with EN ISO 7010
- **Illuminating** – luminaires lightening the escape route
- **Dynamic** – indicate evacuation direction depending on the hazard location.

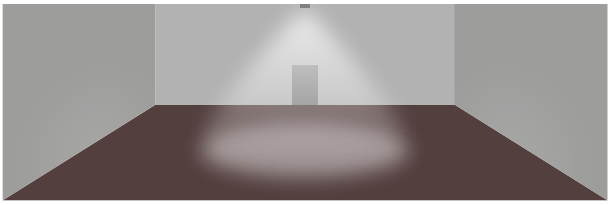
SYSTEM	INDIVIDUAL POWER SUPPLY	CENTRAL POWER SUPPLY	INDIVIDUAL MONITORING	CENTRAL MONITORING	INDIVIDUAL ADDRESSING (it allows for testing and visualising the condition of each luminaire)
STANDARD page 10	●	○	●	○	○
AUTOTEST page 11	●	○	●	○	○
CENTRALTEST page 12	●	○	○	●	●
LVAM (LVDBS) page 16	○	●	○	●	●
CB (HVCBS) page 20	○	●	○	●	○
CBAM (HVCBS) page 20	○	●	○	●	●

OPTICS USED IN THE LUMINAIRES

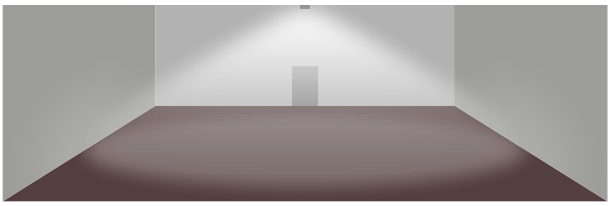
Due to the way of light distribution, depending on the lens used, mounted directly on the LED diodes in emergency luminaires, we use appropriately matched types of optics.

FOR OPEN SPACES

AREA – (AR) symmetrical light distribution in all directions, recommended for use in places of considerable height or to illuminate fire points

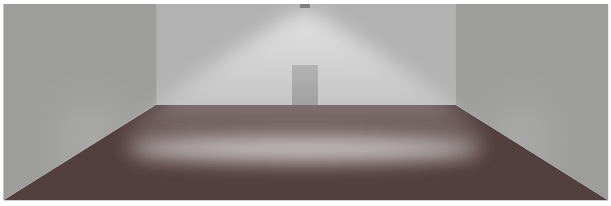


AREA PLUS – (AP) symmetrical light distribution in all directions, ensuring adequate illumination on a large area

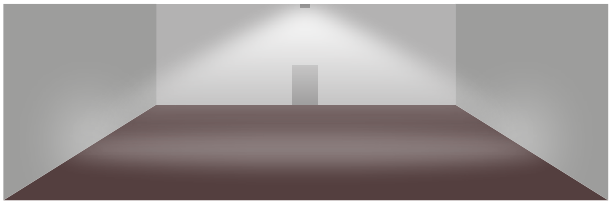


FOR EMERGENCY ROUTES

ROAD – (RO) light distribution mainly along the escape route, recommended for use in high corridors

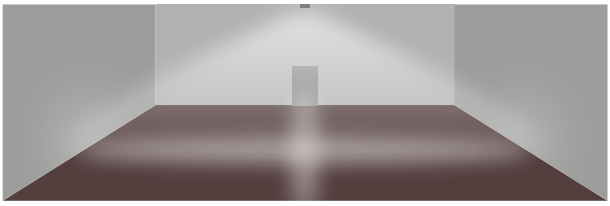


ROAD PLUS – (RP) light distribution mainly along the escape route with a much greater range than for the ROAD optics, for small heights

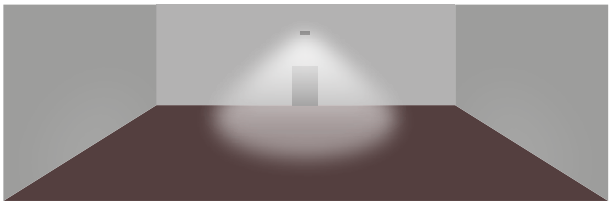


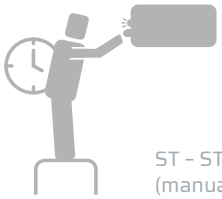
ASYMMETRIC OPTICS

ROAD PLUS H/V – (RPHV) used to illuminate escape routes at the point of their intersections

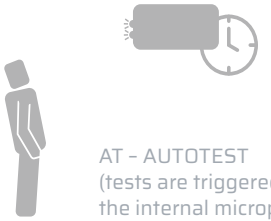


SIDE – (SD) light distribution directed to one side, for wall mounting, spot illuminating

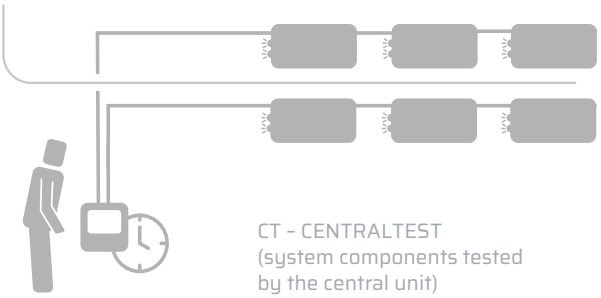




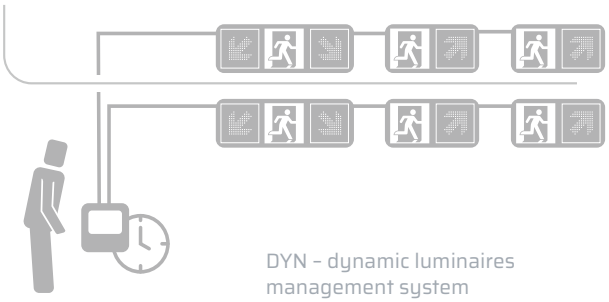
ST – STANDARD
(manual test)



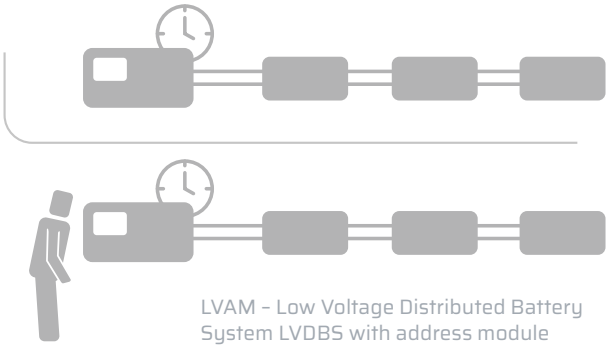
AT – AUTOTEST
(tests are triggered by
the internal microprocessor,
testing is automatic)



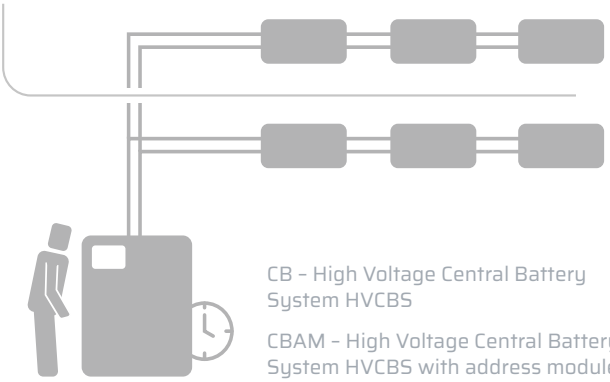
CT – CENTRALTEST
(system components tested
by the central unit)



DYN – dynamic luminaires
management system



LVAM – Low Voltage Distributed Battery
System LVDBS with address module



CB – High Voltage Central Battery
System HVCBS

CBAM – High Voltage Central Battery
System HVCBS with address module

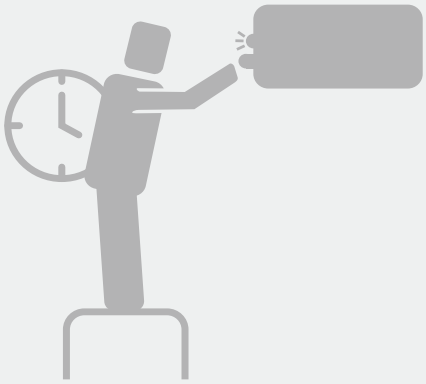
EMERGENCY LIGHTING SYSTEMS

ST – STANDARD

This is the simplest version of the escape emergency lighting luminaire. The luminaires are equipped with a green diode signalling the battery status:

- ● Lighting diode – charged
- ●/○ Flickering diode – charging or disconnected
- ○ Not lighting – damaged

In addition, they are equipped with a test press button (physical or magnetic) enabling the performance of tests. The test is started manually.



Evacuation luminaires and emergency modules in the STANDARD version are dedicated both to companies and private clients for use in places where the fire regulations do not impose such an obligation.

The interest in luminaires and modules in the STANDARD version is very high. This results from the fact that it is the cheapest and simplest type of emergency lighting and using it in small utility buildings raised their comfort and safety.

Also private persons often install the STANDARD luminaires at their homes, offices, garages and basements.

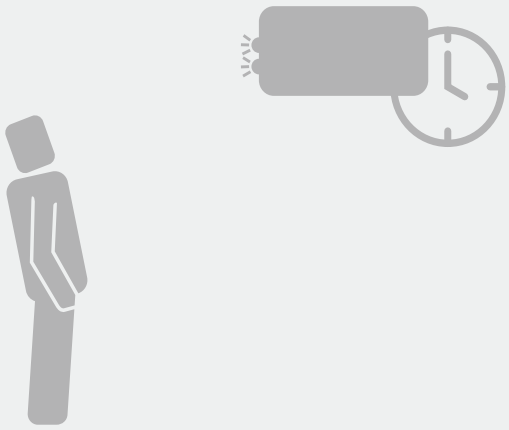
These appliances make use of the microprocessor system and the battery. The system controls battery charging, at the same time taking care of its condition and readiness to work. It also conducts the functionality test (TEST A) started by means of the press button located on the housing or a magnetic switch.

Emergency modules may also be performed in the STANDARD version. The use of these modules in the basic lighting luminaires, make them obtain the emergency lighting functionality.

AT – AUTOTEST

Testing escape emergency lighting luminaires is automatic. Due dates of subsequent tests are triggered by the internal microprocessor.

According to EN 50172, TEST A must be carried out every 30 days, and TEST B every 360 days.



AUTOTEST in emergency lighting luminaires enables the maintenance of their full technical operation ability through systematic functional control and the measurement of lighting time in the emergency operation mode.

Auto functions of the test are:

- Performance of a functional test **TEST A**
- Checking lighting time in the emergency operating mode **TEST B**
- Supervising the current of batteries charging
- Signalling the damage of the emergency luminaire through the lighting of red LED.

TEST A consists in the simulation of power supply failure and switching the luminaire into the emergency operation mode for 1 minute. During this time, the correct functioning of the individual sub-assemblies of the luminaire is tested.

TEST B consists in switching the luminaire into the emergency operation mode and measuring its lighting time until the batteries are discharged. The lighting time measured is compared by the microprocessor with the required lighting time for a given luminaire and when higher value occurs, a red diode signals batteries damage. Through complete batteries discharging (to a voltage threshold specified by the manufacturer of batteries), and then charging, their correct formation takes place.

The functionalities of evacuation luminaires and emergency modules in the AUTOTEST version are between the STANDARD system where a test is triggered manually and results must be checked and the CENTRALTEST system where tests and results are available in a single location. AUTOTEST appliances are equipped with the microprocessor system, battery and signalling diodes but it does not have a TEST press button.

AUTOTEST means automatic and autonomous testing of the technical condition of emergency luminaires or modules; therefore, you do not need any additional appliances or service worker's activity in order to conduct testing required by EN 50172 standard.

The dates of subsequent tests are determined by the internal clock in accordance with the microprocessor software. What is important, in the manufacturing process, clocks are always set so that the deadline for TEST B is different at each time. It secures against the discharging of the whole escape route, what is also stated in the aforementioned standard.

The only inconvenience of the use of luminaires with AUTOTEST is the need for regular visual inspection of LEDs signalling possible faults. For this reason, they should not be used in large buildings where the technical service is not able to inspect them regularly or where their inspection is limited for other reasons. In such buildings, the best solution is the use of the emergency lighting system with central monitoring.

CT – CENTRALTEST

Emergency escape lighting systems in the Central Test version have a central unit which is responsible for the systematic testing of the technical condition of all the system elements but it is not responsible for the activation of luminaires in the emergency operation mode

The emergency operation of luminaires is activated automatically when the voltage supplying these luminaires is lost. All the devices in the system are supplied with power from 230VAC power grid.

The elements of this system are connected with a communication wire, and each device has its own address. The efficiency tests can be carried out at the level of the central control unit on the luminaires and other functions:

- **TEST A** – short one minute test of the luminaire working condition which must be carry out once a month,
- **TEST B** – testing emergency operation time which must be carried out once a year,
- **TEST C** – testing the communication of emergency operation locking,
- **Night mode** – automatic activation of luminaires at specific time (operation from the network, not from the battery).

CENTRALTEST system is popular in medium-sized and large buildings where central monitoring is the only way to supervise effectively so many emergency luminaires, e.g. hotels, schools, hospitals, shopping centres, office buildings, industrial buildings, stadiums, railway stations.

The principle of the system is to use emergency luminaires equipped with individual batteries and the microprocessor system with the possibility of communicating in the CT technology.

All the information on the system condition may be read from the control units or saved as a report.

Apart from luminaires and control units for the CENTRALTEST system, we also offer expanders, that is appliances enabling the connection of more luminaires and extending maximum distance between the control unit and the luminaire.

COMMUNICATION WIRING

- For communication in system should be used cable, e.g. HTKSHekw 1x2x0.8 type (2 core twisted pair cable). Note: Make sure that the cable type is in accordance with the design and current regulations
- The communication line signals are labelled with the following letters: A, B and E. They are led out to the connectors of interface, expander and luminaire
- A and B signals must be led in a strand line, and E signal must be connected to the cable screen
- When performing the communication line installation, it is important to ensure the connection continuity of the screen and each signal, A and B, between all the system elements
- It is required to ensure the PE signal continuity between all the system elements
- It is not permitted to connect the communication line screen cable with the PE signal.

COMMUNICATION TECHNOLOGIES

CENTRALTEST System makes use of 3 different communication technologies which determine the connection manner, wires types, addressing technique and maximum quantities of appliances. In one installation it is possible to use various communication technologies, combining them by means of a proper expander. Technology may be changed from CTL to CTB and CT or from CTB to CT. All the technologies are based on EIA/TIA-485 and author's communication protocol.

CT communication

Currently, all the luminaires, apart from the dynamic ones, make use of the communication technology. Appliances are connected in series in the bus topology and depending on the appliance type we may connect max 64 luminaires or 31 expanders on a single communication line.

Each appliance on the line must have a unique number within the range from 1 to 64 for luminaires and from 1 to 31 for expanders. Numbers are allocated in the manufacturing process in accordance with the project or directly by means of a manual numerator during installation in the building. Maximum length of lines - 1000m.

Expanders may not be connected with one another in series and in parallel with luminaires.

CT-BUS communication

In this technology, expanders H-311, interface H- 310 and control unit H-312 may operate.

As with the CT technology, in the CT-BUS, appliances are connected in the bus topology. CT-BUS enables connection of max 128 appliances in a single line with the max length of 1200 m. The appliances in this communication technology have a unique serial MAC address which is used for communication, what eliminates a necessity for assigning addresses during installation and communication problems resulting from their duplication. Unlike CT, it is possible to join max 7 expanders in series. It may be used for amplifying a signal or for non-typical line branches.

CT-LOOP communication

This communication technology is dedicated mainly to systems with dynamic luminaires.

CT-LOOP is communication in the loop topology with bidirectional short-circuiting insulation, which increases resistance to damage. A superior appliance is capable of detecting a network segment which is not operating (and indicate the appliances in the loop) and change the communication route from the one side of the loop to the other. As with CT-BUS, in the event of CT-LOOP, each appliance has a unique serial MAC address used for communication. CT-LOOP admits max 64 appliances in the loop with max 7 expanders between the control unit and luminaires. Max total line length for a single loop is limited to 1200 m. H-311 CTL expander may also be applied for conversion between CT-LOOP and CT-BUS. Each appliance operating in the CT-LOOP technology is equipped with at least two connectors for communication between which a coupling transmitter is mounted. When communication is lost, each device located in the loop disconnects it by opening a transmitter and then a superior element (control unit, expander) re-couples the loops, separating the damage location, at the same time signalling the appliances to the user between which a wiring segment was damaged.

CENTRALTEST system functionality depends on the control unit:

CONTROL UNIT VERSION	CT COMMUNICATION	CT-BUS COMMUNICATION	CT-LOOP COMMUNICATION	SOFTWARE PC-4 VISUALISATION BROWSER ACCESS	DYNAMIC SYSTEM	HVCBS/LVDBS CONNECTION	BMS CONNECTION
 **H-302C Control Unit** The simplest solution which allows monitoring up to 7936 luminaires, connect BMS and servicing by means of a touch screen – see page 26.	●	○	○	○	○	○	●
 **H-312 Control Unit** The most extended solution ensuring practically unlimited possibilities, including: Monitoring of CT luminaires and HVCBS and LVDBS systems supplied with power centrally, visualisation of installations and localisation of devices, servicing of DYNAMIC luminaires and connection to BMS and SSP. Control unit is serviced by means of a large touch screen or remotely through the Internet browser – see page 28.	●	●	●	●	●	●	●
 **Computer set** Solution cheaper than H-312 where we provide the pre-configured PC set, software and special interface for communication with the luminaire network. This option excludes supporting DYNAMIC and SSP luminaire and provides functionality identical to H-312 – see page 31.	●	●	○	●	○	●	●
 **Software PC-4** on your own computer The most convenient solution, when we have a PC or server, which may be used as a control unit. In this case, we buy software, communication interface and installation service. This functional solution does not differ from the option with a preconfigured computer set – see page 30.	●	●	○	●	○	●	●

DYN SYSTEM

DYN system is the element of CENTRALTEST system and it is characteristic for the use of **SPARK DYN** type luminaires (see page 44).

The evacuation lighting dynamic system is designed for the safe evacuation of people staying in the buildings with extended communication infrastructure.

It is integrated with fire signalling systems and it receives information on the location of a fire hazard, and then, by means of dynamic lighting luminaires, it indicates an optimal escape route. Such a route is indicated depending on the hazard location based on many scenarios pre-defined in the system.

CONNECTION

Dynamic luminaires may be connected with static luminaires to one H-312 control unit or they may have a separate independent control unit. DYN luminaires require loop communication – they have two connectors to which both ports from the control unit are connected and luminaires are joined in series.

One loop may support max 64 appliances. In order to connect subsequent appliances, it is necessary to use H-311 CTL-CTL loop expander, or others, which - as with static luminaire expander, creates a new independent loop for subsequent 64 appliances. CAUTION! When DYN system is used for connecting static lighting, it is necessary to use H-311 CTL-CTB (or CTL-CTL) expander; at the same time, at the expander input, a loop from the control unit will be connected, and at the output, a line for static luminaires.

SPARK DYN

The luminaire has a modular construction (see page 44).

There are two types of modules:

- **Pictogram module** (1-2 modules) – E001 or E002 sign in conformity with EN ISO 7010:2012
- **Arrow/cross module** (1-4 modules) – displaying an arrow consistent with the shape prescribed in EN ISO 7010:2012 and a cross as a prohibition sign.

Luminaire may operate in one of three modes:

- **Basic mode** – with the presence of voltage in the network
- **Emergency mode** – after the loss of voltage in the network or feeding DC voltage by the central battery
- **Fire mode** (hazards) – after receiving an instruction from the control unit.

Each of these modes has an independent configuration of displayed messages, and the fire mode allows max 30 various messages depending on the evacuation scenario.

A proper scenario in a fire mode is selected by the Control Unit based on information from SSP system concerning zones where hazard occurred.

SSP COMMUNICATION

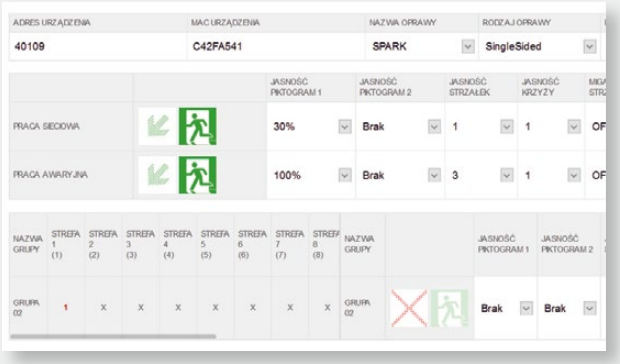
MODBUS TCP/IP or RTU protocol is used for communication with fire signalling systems. Communication with potential-free or voltage signals (dry/wet) is also possible; for this purpose, it is necessary to use H-315 module which is mounted on any communication loop by analogy to the loop expander or dynamic luminaire.

It is also possible to use ADAM-4055 converter.

SCENARIO CONFIGURATION

In order to configure the system, information on messages is required, what luminaires are to be displayed after fire occurrence or other hazard in specific locations based on evacuation scenarios. Such information must be introduced to DYN system configurator.

The configurator is a web application provided to Clients by Hybryd. It allows for configuring all the functions of luminaires and system described in this document and then generating a configuration file in the XML format. This file must be loaded to the Control Unit. After file loading, the Control Unit sends the configuration of messages to luminaires. If saving for all the luminaires is correct, the system obtains a configured status. Configuration may be changed in any moment, this activity does not require manufacturer's intervention.



- The ability to control and monitor dynamic emergency lighting luminaires
- System status reporting in accordance with applicable standards
- Communication with BMS
- Communication with SSP
- Construction and implementation of own evacuation scenarios
- Automatic control unit configuration with XML file
- Easy-to-use web application

SCENARIO STRUCTURE

Operation scenarios describe responses of dynamic luminaires to hazard signals. Each scenario starts with the determination of a value of each SSP signal which the scenario applies to.

Groups 01..06 symbolise respective scenarios of the system operation. For each zone, two-state signal “1” or “0” from SSP may be replaced with sign “X” symbolising any signal value. The group is activated when the set signal values are consistent with signals from SSP. In this way, a Fire protection group is created which is allocated to a given luminaire, by selecting a message proper for a situation, which must be displayed.

Luminaires not allocated to a given Fire Protection Group will not switch to the fire mode if it is activated. When “X” signs are used in the group configuration, it is allowed to activate many Fire Protection groups at the same time.

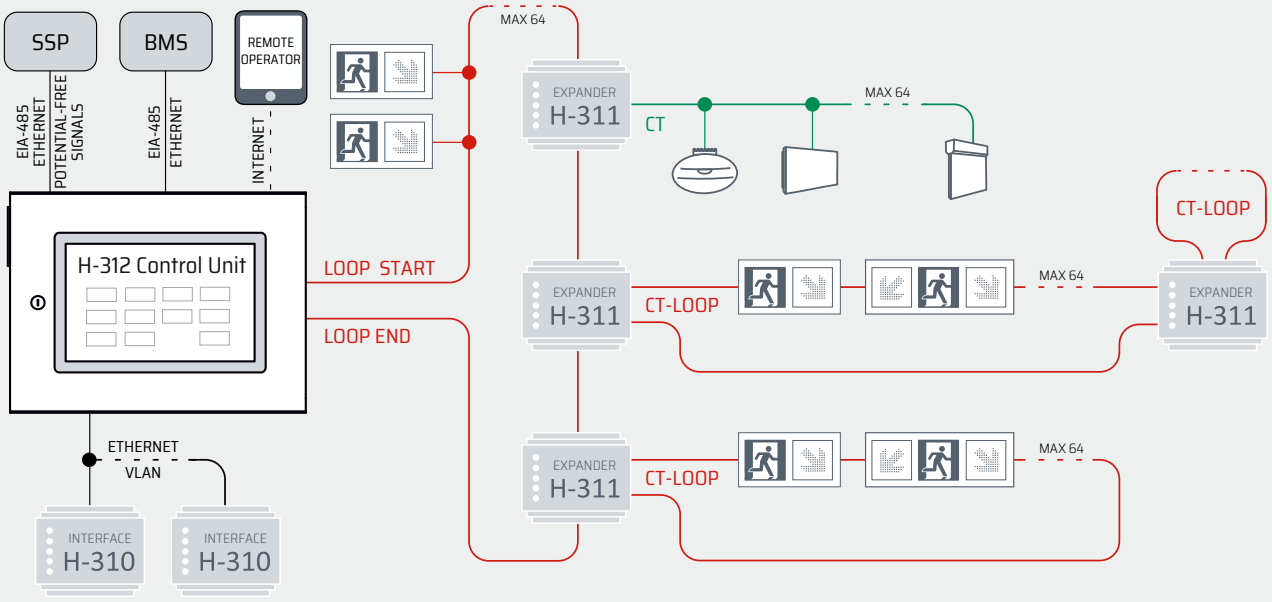
The configurator allows for printing a scenario in the form of graphic documentation or tables.

Grupy:

Nowa grupa

NAZWA	ILOŚĆ LAMP	STREFA 1 (1)	STREFA 2 (2)	STREFA 3 (3)	STREFA 4 (4)	STREFA 5 (5)
GRUPA 01	1	1	X	X	X	X
GRUPA 02	10	1	X	X	X	X
GRUPA 03	1	1	X	X	X	X
GRUPA 04	1	1	X	X	X	X
GRUPA 05	2	X	X	X	X	1
GRUPA 06	14	X	1	X	X	X

NETWORK TOPOLOGY



LVDBS SYSTEM

Low Voltage Distributed Battery System enables to supply emergency and evacuation lighting luminaires.

The system consists of the LVDBS unit (which contains control, monitoring and power supply electronic systems with batteries) and luminaires connected to it. System is designed in accordance with EN 1838, EN 50171, EN 50172 and EN 62485-2.

Emergency operation time is one, two or three hours (special variant). Hermetic maintenance-free batteries with the lifespan of 10 years are used.

It is dedicated to operation:

- At input voltage of 230V AC
- At output voltage of 24V DC.

During normal operation, the output voltage is obtained directly from the power supply, powered from the power grid, which additionally charges the batteries. During a power failure, the system goes into emergency mode and the 24V output voltage is obtained from batteries.

This type of system is intended for small buildings or where the replacement of autonomous luminaire batteries would generate high costs (e.g. due to the mounting height of luminaires), and the use of HVCBS system would not be profitable.

- User-friendly menu
- State signalisation from each line
- Small system size
- SELV network
- Possible configuration of each line in the lighting mode, door holders (electromagnet) and signalling (horn or flash)
- Possible creation of fire signalisation scenarios for respective lines
- Automatic performance of tests in accordance with EN 50172
- Possibility of connecting circuits controlling the system operation
- 4 inputs controlled by potential-free contacts
- Possibility of connecting the informative and signalling system
- 3 outputs (system deactivation signalisation, battery operation signalisation, failure signalisation)
- Possibility of the system history preview and loading history to the external USB memory
- Possibility of generating reports and saving them in the external USB memory
- Ethernet socket
- Cooperation with BMS.

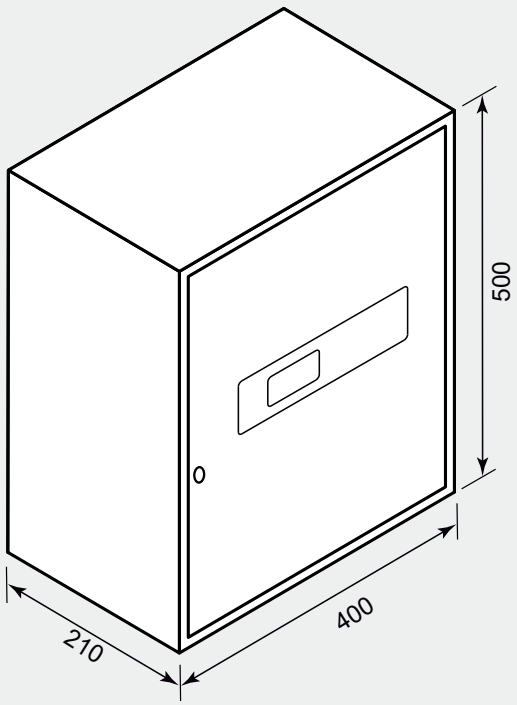
TECHNICAL DATA

Power supply	230V AC
Connection power	500VA
Power load on one circuit [1]	75W
Number of circuits	4
Output voltage	24V DC

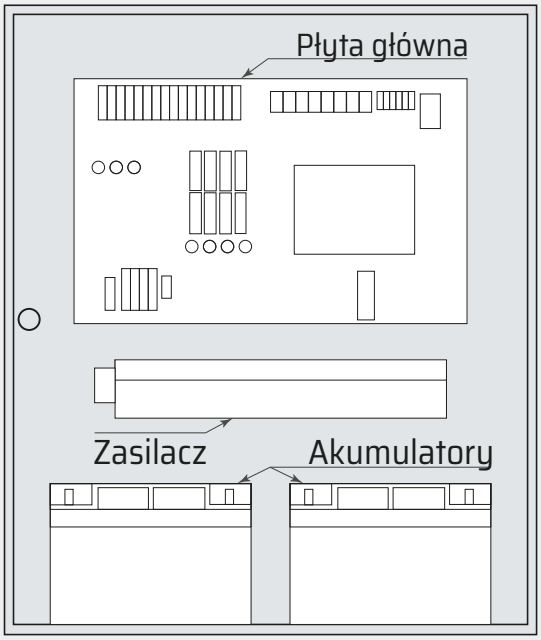
Buffer voltage level	27,2V		
Ambient temperature	15°C – 25°C		
Emergency operation time	1h	2h	3h
Battery capacity	20Ah	40Ah	65Ah
Weight	15kg	27kg	60kg [2]

[1] measured on LVDBS unit terminals; [2] LVDBS cabinet + cabinet with 65Ah batteries

DIMENSIONS

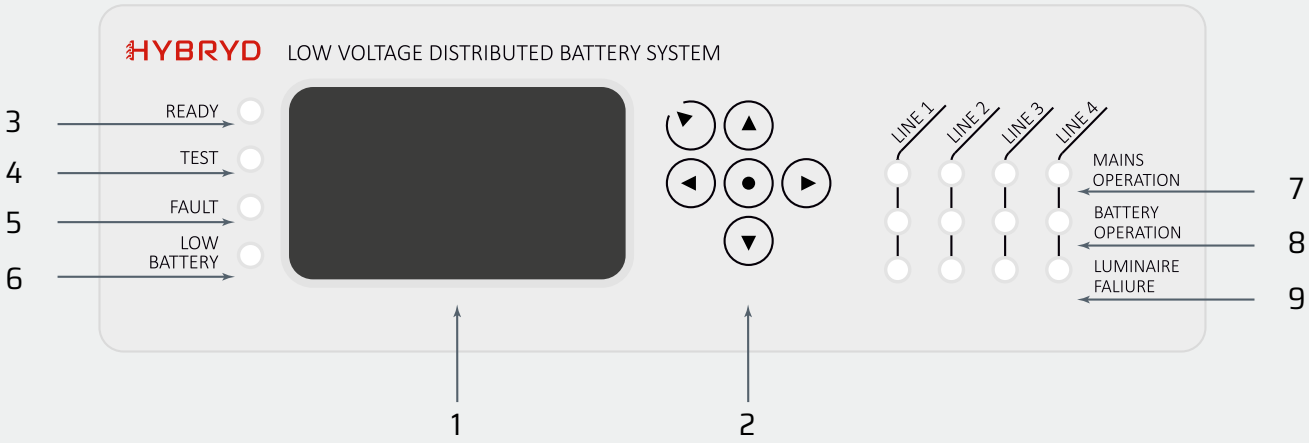


GENERAL VIEW



LVDBS UNIT

LVDBS units are equipped with a microprocessor controller with display and press button membrane panel. The controller is responsible for controlling the system operation and for communication with Control Unit or computer set through TCP/IP connector ETHERNET. Communication between cabinets enables you to view system results and states by means of the main unit.



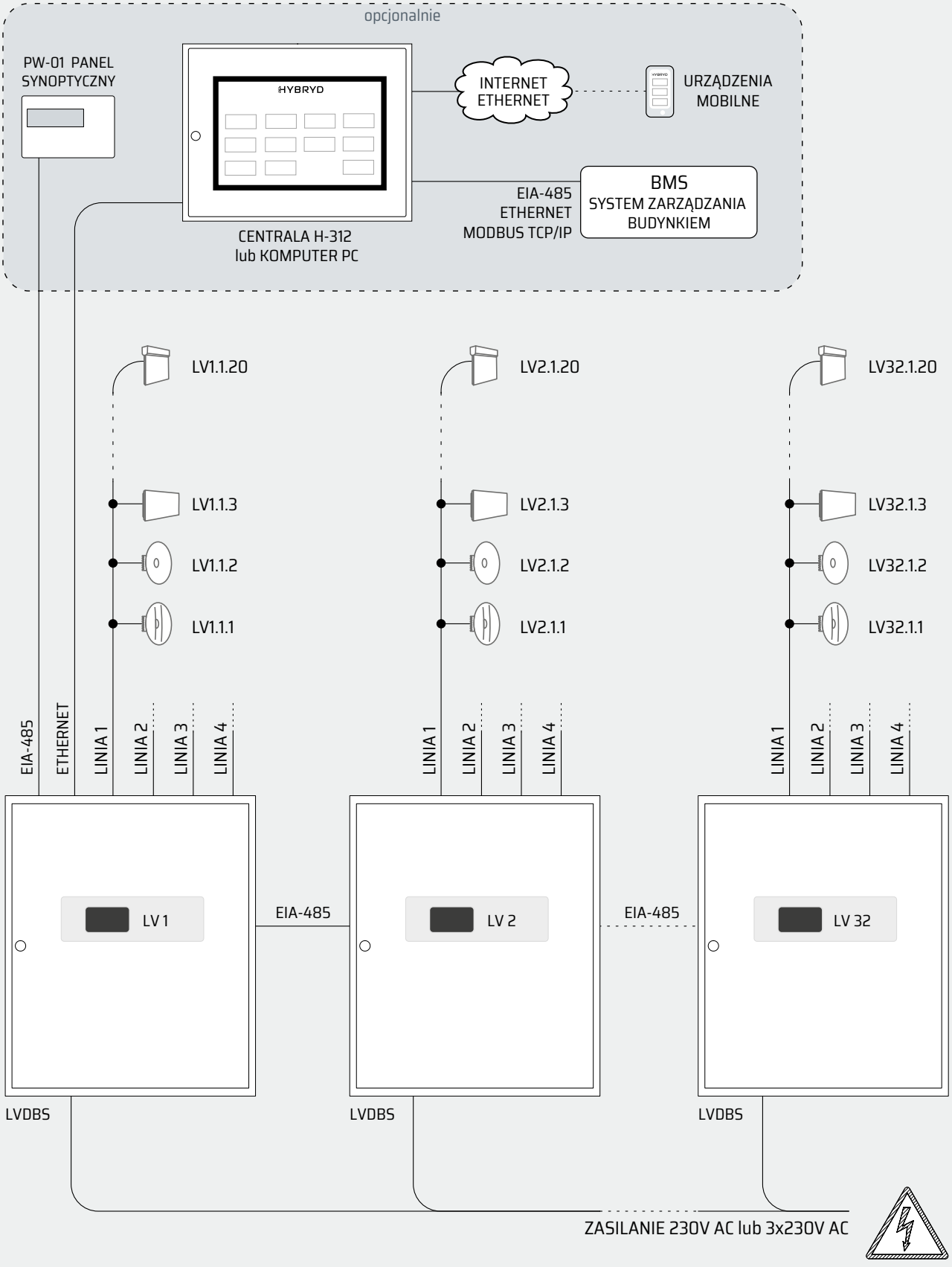
1. Display
2. Menu navigation buttons
3. LED indicating the correct system operation
4. LED indicating test execution or system battery operation
5. Error LED
6. LED indicating battery discharge below 19V
7. LEDs indicating the presence of voltage on the line
8. LEDs indicating battery operation (maintained mode)
9. LEDs indicating failure on the line

COMMUNICATION

The system may consist of 32 units connected through EIA/TIA-485 connector but operating independently. A communication line uses 2 strands led in a screen, e.g. HTKSHekw 1x2x0.8 Communication with luminaires supplied with the voltage of 24VDC takes place though lines power supply. Address modules are used for individual luminaires control.

LVDBS can also be expanded with the PW-01 module, which allows you to remote control of the system status. Basic parameters such as voltage, current, operating mode, information on errors, tests and operating status are displayed on a clear, modern LCD display.

NETWORK TOPOLOGY



HVCBS SYSTEM

High Voltage Central Battery System (HVCBS) enables to supply and control of emergency and evacuation lighting luminaires.

It is designed according to EN 50171:2007, EN 50172:2005, EN IEC 62485-2:2018-09, EN IEC 62485-1:2018-09 standards.

It may include a main station and sub-station or main station only. Owing to the possible extension with sub-stations, HVCBS system is proper for use in small, medium-sized and large buildings.

Emergency and evacuation lighting luminaires connected to the Central Battery System are located in end circuits. Communication with luminaires takes place by means of the power supply line.

A controller with a touch display has a simple and intuitive interface and it allows for fast system configuration. Automatic performance of tests in accordance with EN 50172:2005 from the controller level. Both test results and reports on errors and failures are saved and kept on the internal SD card. It is also possible to save test results and reports on errors and failures on the external USB memory. Such a solution facilitates reporting and keeping the Incident Log (in accordance with EN 50172:2005).

HVCBS uses hermetic and maintenance-free batteries paired in terms of internal resistance and voltage what allows for long-term correct operation. The selection of batteries depends on loading and system operation time during emergency operation.

A temperature probe monitors temperature in the battery. The system has the signalisation of batteries discharging in accordance with EN 50171:2007.

The use of dedicated safety devices for circuits, automatics and batteries affects the increase in the safety level. HVCBS System is dedicated to supply the emergency and evacuation lighting circuits in the IT network in the battery mode.

Central unit housing types:

- One-section housing
- Two sections housing
- Fireproof housing
- Housing with increased tightness to IP65
- Mounting plate

Battery housing types:

- Cabinet
- Rack
- Fireproof cabinet

- Power supply voltage: 3x230V AC
- Output voltage: 230V AC or 220V DC
- Max power of reception: 16kW (see following table)
- Touch LCD with user-friendly menu
- Automatic performance of tests, acc. to EN 50172:2005
- Safe test result to SD card, acc. to EN 50172:2005
- Possibility of the individual configuration of access to the system
- Monitoring the presence of voltage from basic lighting switching stations, acc. to EN 50172:2005
- Possibility of extending the system with substations (up to 32)
- Max 64 circuits for one system unit (see following table)
- Monitoring luminaires or circuits
- Communication with luminaires by means of a power supply line
- Configuration of luminaires operation modes, maintained/non-maintained
- System compensating current surge at switching the lighting on
- Hot swap technology
- USB socket
- Ethernet socket
- EIA/TIA-485 connector
- Cooperation with BMS
- Cooperation with back-up power supply systems
- Lockout function
- 10 years lifespan battery
- Battery discharging signalisation
- Temperature probe.

TECHNICAL DATA

Data depends on system implementation (see product data sheet card).

	ONE-SECTION HOUSING	TWO SECTIONS HOUSING	FIREPROOF HOUSING (EI30, EI60, EI90)	IP65 HOUSING	MOUNTING PLATE
Power supply	3x230V AC	3x230V AC	3x230V AC	3x230V AC	3x230V AC
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz
Network type	TN-S/IT	TN-S/IT	TN-S/IT	TN-S/IT	TN-S/IT
Power of reception	≤ 1,5kW ≤ 0,5kW	≤ 1,5kW ≤ 0,5kW	≤ 5kW ≤ 2,4kW	≤ 5kW ≤ 2,4kW	≤ 5kW ≤ 2,4kW
Emergency operation time [1]	1h 2h	1h 2h	1h 2h	1h 2h	1h 2h
Battery capacity	≤ 40Ah	≤ 134Ah	≤ 40Ah	≤ 40Ah	≤ 40Ah
Number of circuits	≤ 16	≤ 64	≤ 32	≤ 32	≤ 32
Number of potential-free inputs [2]	5	5	5	5	5
Number of relay outputs [3]	4	4	4	4	4
Panel ext [4]	1	1	1	1	1
Number of substations [4]	≤ 32	≤ 32	≤ 32	≤ 32	≤ 32
USE [4]	7 [5]	7 [5]	7 [5]	7 [5]	7 [5]
USO ext [4]	≤ 16 [6]	≤ 16 [6]	≤ 16 [6]	≤ 16 [6]	≤ 16 [6]
Protection class	I	I	I	I	I
Ingress protection	IP20	IP20	IP54	IP65	-
Dimensions (width x height x depth) [mm]	604-871 x 600 x 400	337-1965 x 600 x 500-600	1080-1300 x 860 x 400	1000-1200 x 800 x 300	800 x 800, 1290 x 770

[1] 3h – special variant; [2] maximum number of potential-free inputs = 29; [3] number of information outputs (BMS); [4] additional option;
[5] the total number of USI + USE modules cannot exceed 7 (56 potential-free contact inputs); [6] the total number of circuits cannot exceed 64

SYSTEM CONSTRUCTION

The system structure is made in 19-inch standard, which includes the following modules:

H-505 module is the main control unit in the HVCBS system, its main functions include:

- Monitoring and control of all internal system components
- Communication with substations
- Communication with Building Management Systems (BMS)
- Local interface based on the colour TFT LCD touch screen
- Automatic testing in acc. with the EN 50172:2005
- Saving tests results on SD card
- Saving tests results and settings on USB stick.

UKN module – allowing the measurement of parameters such as battery voltage, battery charging and discharging, load current and insulation state monitoring.

USI module – with potential-free contact inputs and relay outputs. Potential-free contact inputs may be paired with any lines and control them.

USO module – checking the condition of the luminaires in the final circuit. A single module allows to connect two final circuits.

Rectifier – used for battery charging, designed according to the EN IEC 62485-2:2018-9 standard. Owing to solutions adopted in the module, current surge after connecting to the network is ensured. Output specification of the rectifier with impulse output current limitation of the constant voltage-constant current type. It has over-voltage protection at the level 110-120% of nominal voltage (infinitely variable adjustment). Output voltage adjusted to temperature changes according to the requirements of batteries manufacturers.

External modules allows to extend the system capabilities:

USE module – external module allowing for extending the system with 8 additional inputs of potential-free contacts. Potential-free contact inputs may be coupled with any circuits and controlled. It is possible to select the mode of inserting potential-free contact inputs (short-circuiting, opening controlled input, impulse controlled input). HVCBS may be extended max to 56 inputs of potential-free contacts.

USO ext – it is an external module allowing for extending the Central Battery system with additional 4 end circuits. This module as USO module allows for controlling end circuits. Owing to a small size and ergonomic shape, it may be installed in places where the use of a sub-station is not possible. An additional asset of this appliance is economy resulting from fewer lines.

USE voltage module – external module allowing for extending the system with 8 additional inputs of potential-free contacts. Potential-free contact inputs may be coupled with any circuits and controlled. The module detects a power failure/power outage. The total number of additional USI + USE modules cannot exceed 7.

PW-01 module – allows for remote control of HVCBS condition. Basic parameters, such as voltage, current, operation mode, information on errors, tests and operation state is displayed on a transparent modern LCD.

Bus connected phase control module MCZF-1 allows you to monitoring of the presence of three-phase voltage. The PSCL (Power suply & communication line) allows for the parallel connection of many sensors in a star, bus or mixed topology. It saves communication cable, by using the two-wire (communication and power) line. It is an alternative to additional USI modules and standard phase control sensors connected by separate cables. Each module has its own individual address, set using the switches. It is possible to address 61 sensors.

ECU (External Communication Unit) is a module used to isolate and separate the internal communication of the system. It allows you to connect up to three additional communication modules (UART or PSCM) that allow you to connect up to 64 external lines and up to 61 MCZF-1 modules.

PSCM (Power Supply & Communication Module) is a module that allows you to connect MCZF-1 phase control sensors or a battery control system. It can be placed in a free port of the H-505 unit or ECU module.

COMMUNICATION

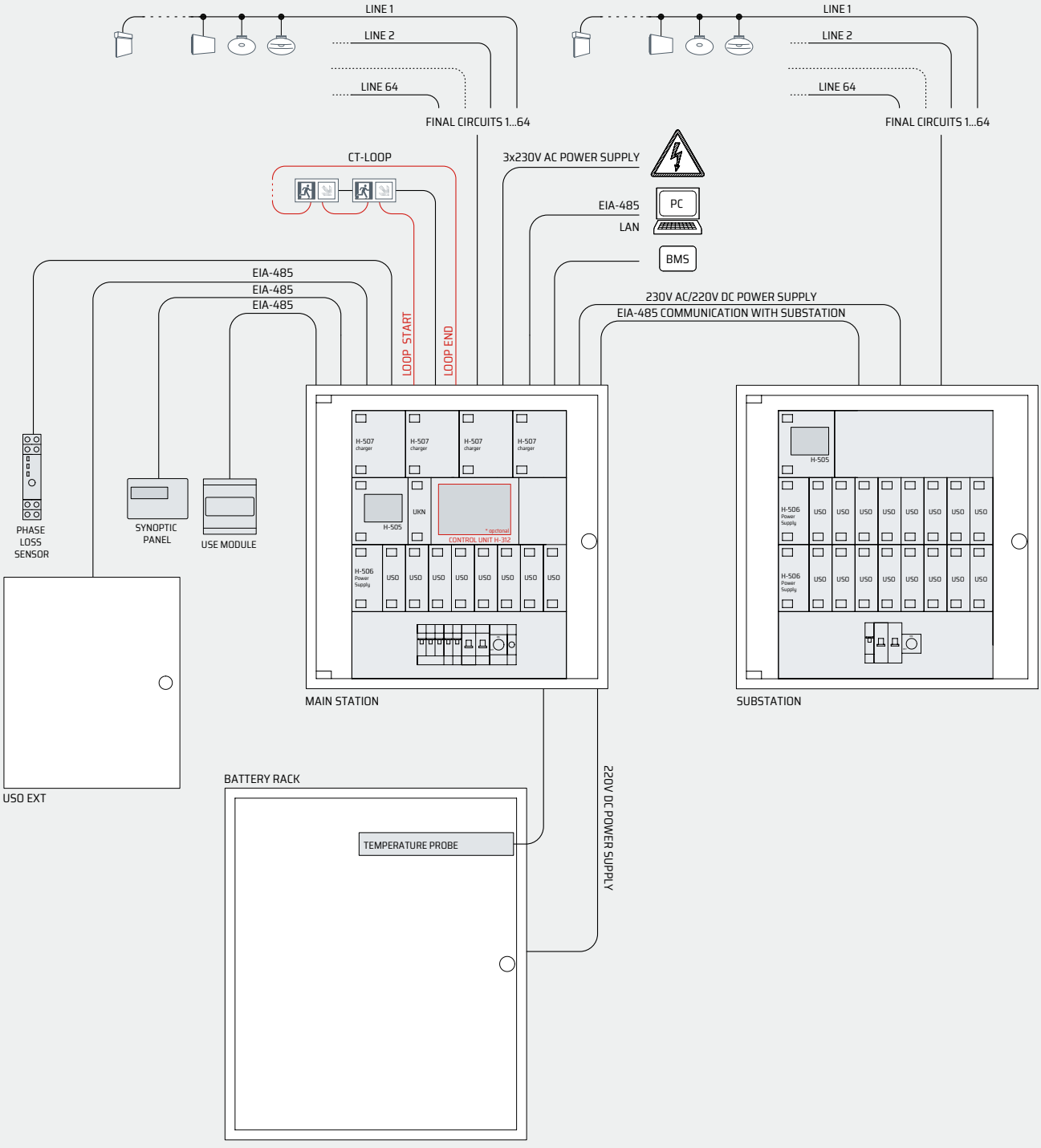
Communication between the main station, sub-stations and external modules takes place by means of EIA/TIA-485 bus. The communication line uses 2 wires shielded twisted pair, e.g.. HTKSHekw 1x2x0,8.

In HVCBS the working order of luminaires may be checked through line control (end circuit current measurement) or through the individual control of luminaires with the use of address modules. Communication with luminaires takes place along the power supply line, the system does not require a separate communication line.

The communication of the main station controller with H-312 Control Unit or computer set takes place through the Ethernet connector and allows for extending HVCBS with remote monitoring and convenient management.

HVCBS controller (e.g.. H-505) cooperates with BMS (Building Management System) by means of MODBUS TCP/IP or RTU protocol and with back-up power supply systems. System configuration allows for monitoring the presence of voltage from basic lighting switching stations in accordance with EN 50172:2005.

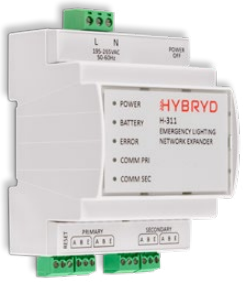
NETWORK TOPOLOGY



H-302C Control Unit

H-312 Control Unit

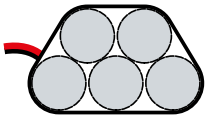
PC 4 Software
Computer set



H-310 interface

H-311 expander

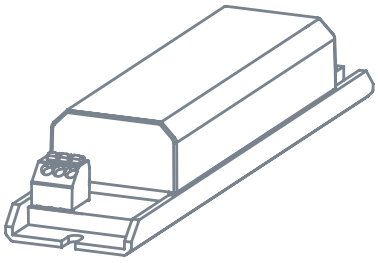
H-237 module



Batteries, cells

Protective cages

Universal mounting kits

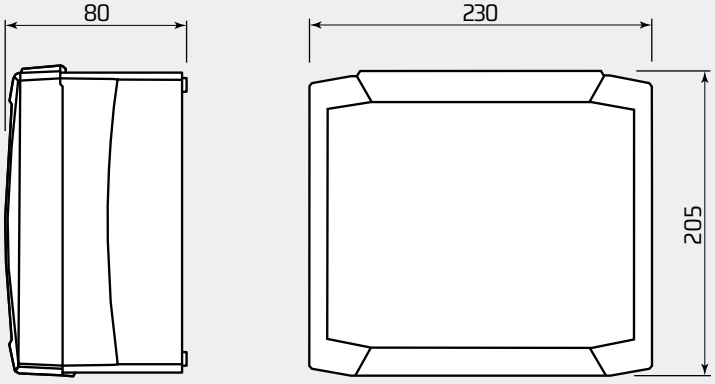


CONTROL UNITS, MODULES, ACCESSORIES

H-302C CONTROL UNIT

The **H-302 control unit** is the simplest solution of the CENTRALTEST system that allows to monitor up to 7936 luminaires and operate using a touch screen.

The main purpose of H-302C unit is supervision and control over efficiency of all connected system components.



- Initiation of automatic and manual tests of all system components
- Test results registration
- Generation of alarms in case of any failure
- Saving test results on the external USB memory
- Automatic luminaires control in the group addressing system
- Control of luminaires from fire safety group
- Night lighting control
- Connection to BMS

IP65

TECHNICAL DATA

Supply voltage	230V AC 50Hz
Power consumption	5VA
Protection class	I
Ingress protection	IP65
Radio-electric disturbances	N level
Line galvanic separation	1500V
Line loading (1 of 4)	Max. 64 luminaires or 31 expanders

Emergency operation time (taw)	3h
Number of the serviced luminaires	7936 – independent addresses
Group controlling	Max. 4 groups + 1 fire protection group
Zones controlling	Max. 127 zones
Tests	A, B, C Test
Communication line length	Max. 1000m

MATERIAL

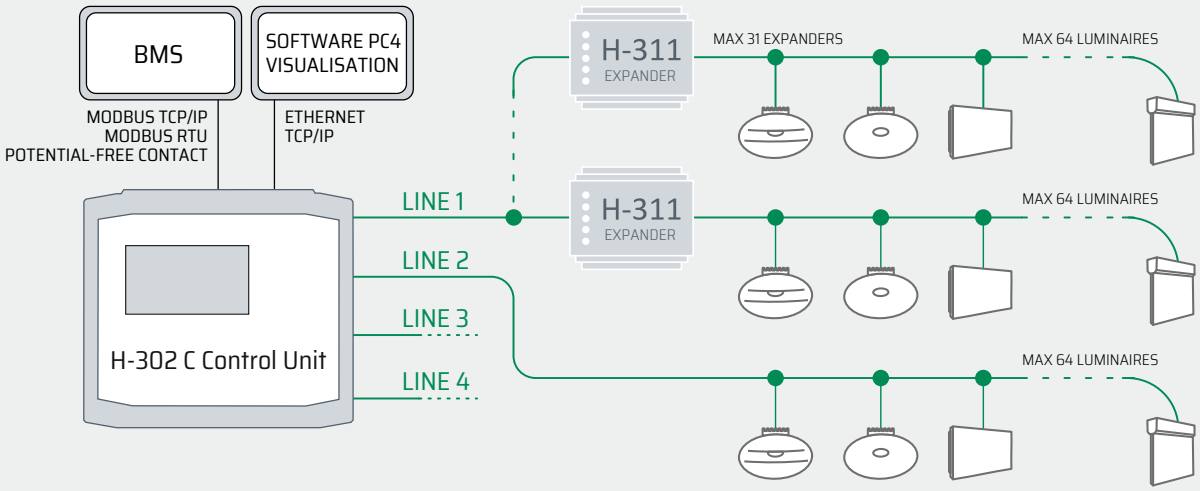
Housing material – high quality ABS plastic and polycarbonate

Housing Colour – RAL 7035 / RAL 7024

APPLICATION

The CENTRALTEST system installation consists of combined CT luminaires in parallel to the control unit with the EIA/TIA-485 line. Maximum 64 luminaires may be placed on one control unit line. To connect a larger one number of devices should be used H-311 CTB-CTB network expander. The network expander output creates separate lines for subsequent 64 devices.

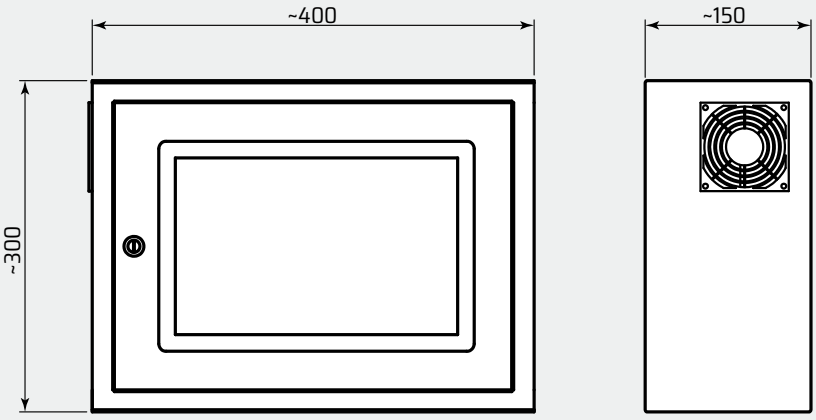
NETWORK TOPOLOGY



H-312 CONTROL UNIT

The **H-312 Control Unit** is a simplest solution of the CENTRALTEST system which allows to monitor up to 7936 luminaires and operation by means of a touch screen.

Its main purpose is to supervise and control the efficiency of all system components.



- Monitoring of CT luminaires and supplied centrally HVCBS and LVDBS systems
- Visualisation of installations and localisation of appliances
- Control unit is serviced by means of a large touch screen or remotely through the Internet browser
- Handling CT and CT- BUS, CT-LOOP basic communication technologies which allow to install up to 7 expanders on the route from the control unit to the luminaire
- New transmission method – new author 's communication protocol based on MAC addresses allocated during manufacturing what eliminates the need for manual numbering
- New addressing method – apart from MAC address, each appliance in the network has a linear logic address (1-65535) and physical address representing the physical route from the main unit to the appliance
- Advanced communication with BMS and SSP systems
- Dynamic luminaires handling – they indicate an evacuation direction depending on the hazard location

IP20

TECHNICAL DATA

Supply voltage	230V AC 50/60Hz
Power consumption	52 – 153W
Protection class	I
Ingress protection	IP 20
Battery	VRLA 12V 2,2Ah (1h); 5Ah (2h); 7,2Ah (3h)
Interfaces	1x Ethernet, 1x USB 2.0
Screen	10,1", touch capacitive

Processor	Intel 2x1,46GHz
RAM memory	4GB
Operating system	Microsoft Windows 10
Output lines	2, 4 or 6
Inputs	WET type, none, 8, 16 or 24
Weight	10 – 15kg

MATERIAL

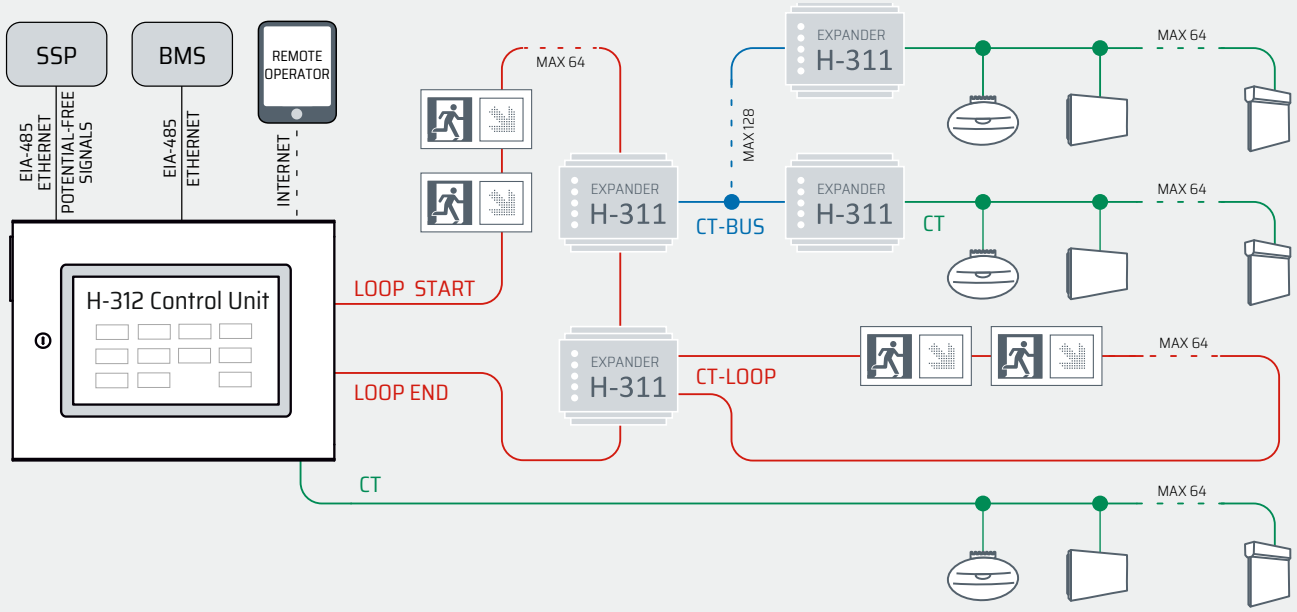
Housing material – steel

Housing colour – ○ RAL 9003

APPLICATION

The most extended solution, intended for communication, supervision of correct operation and control of lighting luminaires.

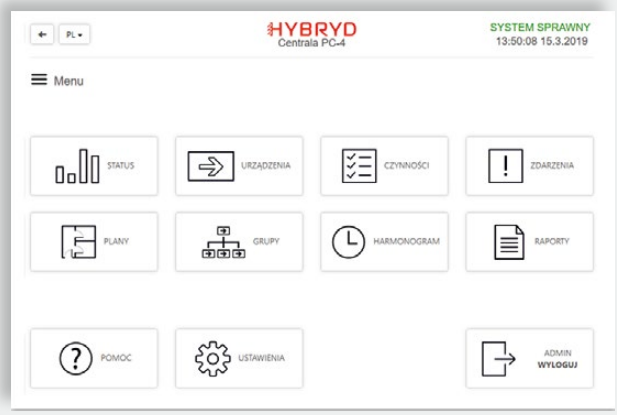
NETWORK TOPOLOGY



PC 4 SOFTWARE

PC 4 software developed by Hybryd is a central system point allowing for easy management of all the system elements.

It works under the control of Microsoft Windows.



PROGRAM COMPONENTS

- Background system service - responsible for communication and implementation of user's demands
- WWW server providing user's interface
- SQL Database.

SYSTEM FUNCTIONS

- Performance and planning efficiency tests
- Detailed reporting on the condition of devices
- Configuration of dynamic luminaires
- Luminaires controlling
- Advanced diagnostics
- Localisation of damage in the plan building
- Supporting all centralised Hybryd systems:
  - DYN system (Dynamic Lighting)
  - Central Test System
  - LVDBS System
  - HVCBS System.

ORDERING

Installation and software activation is performed by the manufacturer's service or supplied in the pre-installed form with the computer set.

MINIMUM COMPUTER REQUIREMENTS

Processor	Dual-core 1,5 GHz or better
RAM memory	2GB
Free disk space	10GB
Communication port	1 x USB or 1 x Ethernet
Operating system	Windows 7/8/10
Optional	Uninterruptible power supply UPS

REPORTS

The system is able to generate many reports depending on a schedule. It is possible to generate report the overall system and device status or create a detailed report with a list and a description of events for each device. Reports may be generated in PDF or HTML format and they are archived in the system with the possibility of subsequent preview.

INTEGRATION WITH BMS

Integration with the BMS system is possible by the following two means:

- Through ETHERNET interface and MODBUS TCP/IP protocol
- Through EIA-485 interface and protocol MODBUS ASCII or RTU.

VISUALISATION

A plan in vector technology constructed based on the as-built documentation. It allows for rapid localisation of malfunctions:

- A colour indicates a luminaire status
- After choosing a luminaire in the plan, a device profile view is generated
- The possibility of rapid localisation of a single luminaire in the plan.

COMPUTER SET

Computer with the installed Hybryd PC-4 software fulfils the function of the system central unit.

A H-310 interface is required to connect CentralTest devices - see page 32.

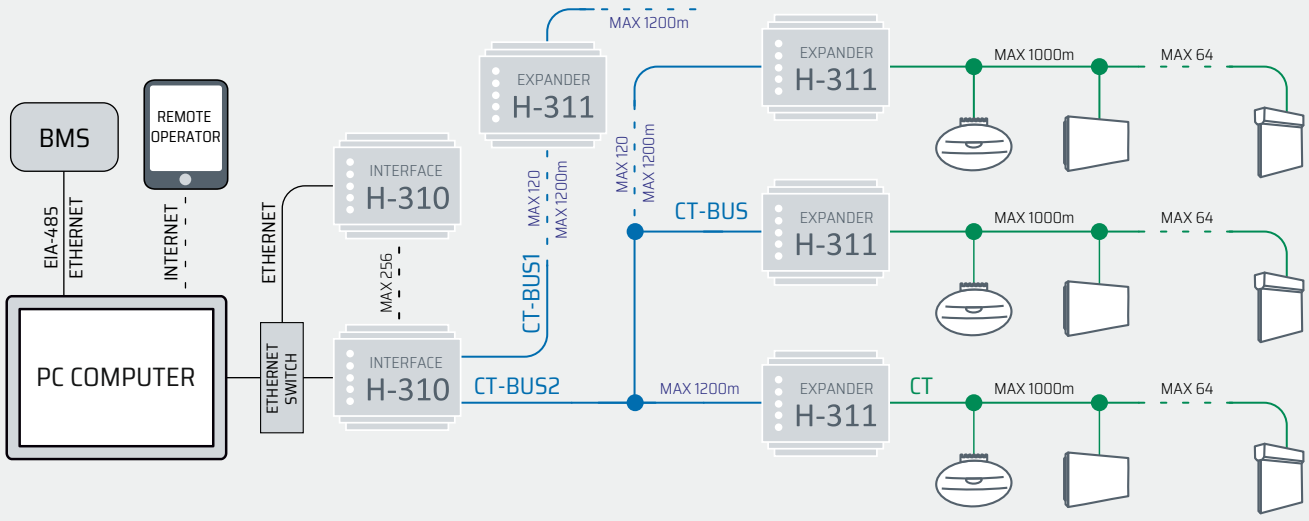
Illustrative drawing

The computer set enables local control and serves as the server for remote users.

The computer is connected by means of the dedicated interface or as far as HVCBS and LVDBS are concerned, by means of Ethernet with emergency lighting appliances.

Hybryd preinstalled software **PC-4**	YES
The possibility of hanging the computer behind the monitor (VESA mounting) or on the wall	YES
Computer housing dimensions	163x197x220mm (mini ITX)
Monitor	22"
Processor	Intel® Celeron
RAM memory	4GB
Hard drive	SSD
Operating system	Microsoft Windows 10
Ethernet interface, RS-232 serial port, keyboard and mouse, UPS	YES

NETWORK TOPOLOGY

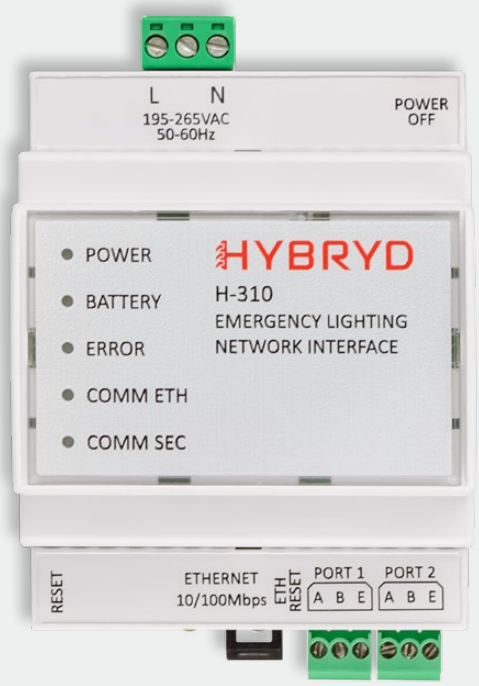


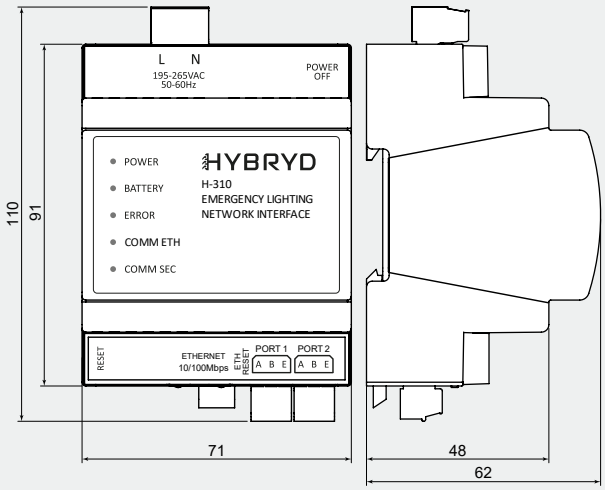
H-310 INTERFACE

Main task of the **H-310 network interface** is to allow a PC computer access to the HYBRYD emergency lighting luminaire network.

The H-310 network interface is equipped with a 10/100Mbps Ethernet port and may be connected directly or indirectly by the means of a network switch to a computer. It is also equipped with two output channels of which one may be used for direct luminaire connection and the other to connect luminaires over H-311 network expanders.

The H-310 network interface has two independently working communication ports. The first one can operate as CT for the required CT-BUS (PORT2), the second one can operate only as CT-BUS (PORT1).





TECHNICAL DATA

Supply voltage		230V AC 50/60Hz
Power consumption		< 8VA
Power factor		0,5
Protection class		II
Ingress protection		IP20
Maximum bus length	CT	1000m
	CT-BUS, CT-LOOP	1200m
Battery		Li-Ion 3,7V / 2,2Ah
Emergency operation time		>3h
Network topology		1x CT or 2x CT-BUS 1x CT-LOOP [1]
Ambient temperature		+5°C – +35°C
Installation kind		DIN rail, 4M; Wall [2]
Power supply cable		0,5 – 1,5mm²
Housing		PC/ABS

[1] Possible configuration in the software

[2] Power supply terminal must be covered by means of a cable tray

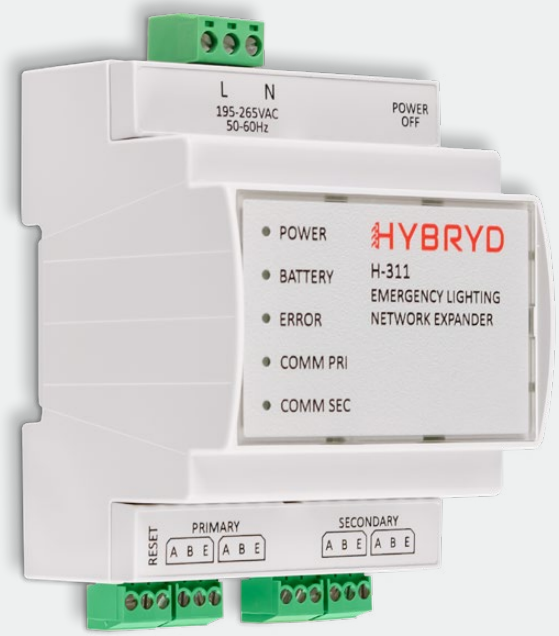
CONSTRUCTION

- The device consists of an ETHERNET interface and a built-in H-311 network expander
- Device elements are placed in a modular housing designed for mounting on a DIN rail or on the wall
- Supplied using two cables (L, N), cable cross section area 0,5 – 1,5mm², supply voltage 230V AC 50-60Hz
- Internal Li-Ion battery guarantees more than 3 hours of operation without external power
- On the front of the H-310 unit a label with the built-in network expander MAC address and ETHERNET interface MAC address is placed.

H-311 EXPANDER

The task of H-311 expander is to extend the system communication network with subsequent communication lines, where other H-311 expanders are placed or emergency lighting luminaires made by HYBRYD.

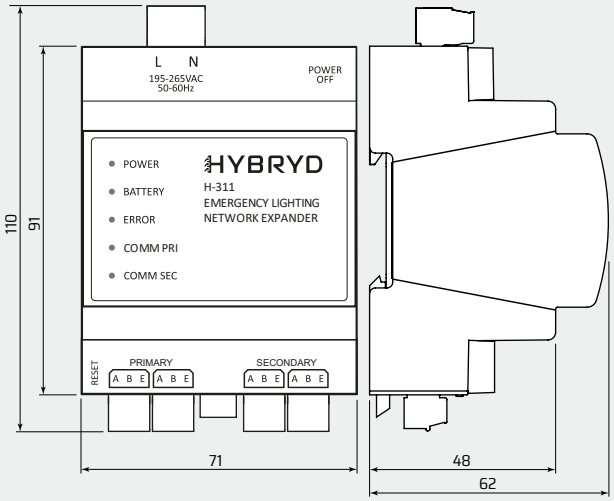
H-311 expander has two communication terminals which, depending on performance, may operate in CT-BUS or CT-LOOP communication technology. By means of the expander, it is possible to switch between CT-BUS technology and CT-LOOP technology and vice versa. The first terminal is a superior terminal (PRIMARY) and it is used for connecting the expander to the superior appliance. The second terminal is subordinate terminal (SECONDARY) and it is used for connecting other expanders or luminaires.



TECHNICAL DATA

Supply voltage		230V AC 50/60Hz
Power consumption		< 8VA
Power factor		0,5
Protection class		II
Ingress protection		IP20
Maximum bus length	CT	1000m
	CT-BUS, CT-LOOP	1200m
Battery		Li-Ion 3,7V / 2,2Ah
Emergency operation time		>3h
Network topology		CT; CT-BUS; CT-LOOP [1]
Ambient temperature		+5°C – +35°C
Installation kind		DIN rail, 4M; Wall [2]
Power supply cable		0,5 – 1,5mm²
Housing		PC/ABS

[1] Possible configuration in the software, 2x CT-BUS available only in the CTL version
[2] Power supply terminal must be covered by means of a cable tray



CONSTRUCTION

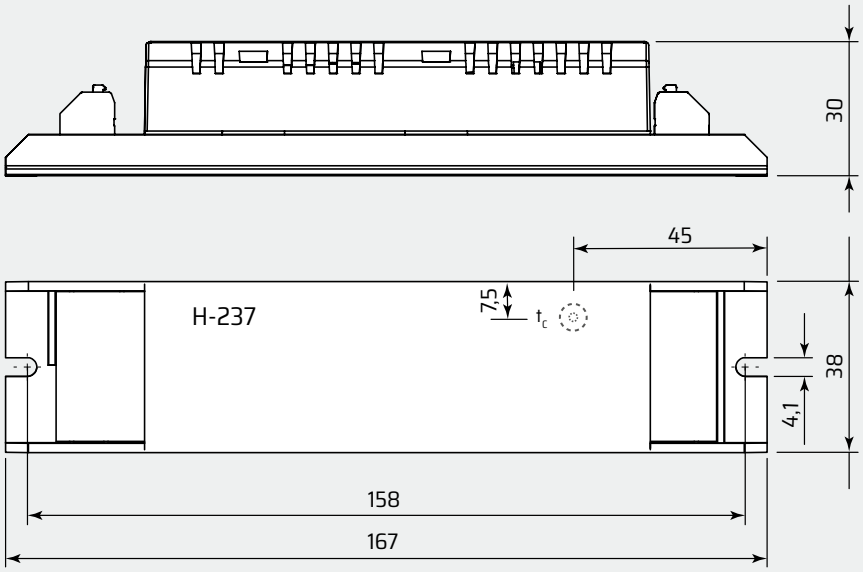
- The expander has two groups of terminals, communication and power supply
- The appliance elements are placed in the module-type housing dedicated to mounting on the DIN rail, where it takes 4 standard widths or on the wall
- H-311 expander may be mounted in electric switching stations provided that the distance of power supply lines is not shorter than 10 cm
- Supplied using two cables (L, N), cable cross section area 0,5 – 2,5mm², supply voltage is 230V AC 50-60Hz
- Internal Lithium Ion battery guarantee more than 3 hours of operation without external power
- On the front of the H-311 unit a label with the built-in network expander MAC address and ETHERNET interface IP address is placed.

H-237 MODULE

H-237 module is designed for emergency power supply of LEDs in an amount of 1 to 12 with direct current and power up to 10W.

With an additional power supply it is possible to continuously supply the LED module (maintained/basic mode). The compact design of the module enables use in many modern lighting luminaires for the construction of emergency and evacuation LED lighting.

In CENTRALTEST system it works in emergency lighting system with central monitoring.



- A lot of external protections: circuit protection, light source reverse polarity, light source disconnection detection, battery damage or disconnection detection, clear power outage detection (resistance to fractional power outages/power flicker)
- LED signalling (green and red)
- Small size, allows mounting in tight suspended ceilings
- Versatility of operation in various system structures: AUTOTEST, CENTRALTEST
- Wide range of supported light sources – from single power LED to multi LED matrices
- Maintained operation mode, non-maintained (power adapter required) or night mode (power adapter required)
- Simple connections – screwless connectors, plug sockets
- Compatibility with most LED power supplies

CE IP20

TECHNICAL DATA

Supply voltage	230V AC 50-60Hz
Power consumption	< 7VA
Protection class	II
Ingress protection	IP20
Output power	1 – 10W
Output current	0,05A – 1A
Output voltage	12V, 15V, 24V, 43V
Battery type	Ni-Cd, Ni-MH
Battery voltage	4,8V; 8,4V

Battery capacity	1,0Ah; 1,5Ah; 2,5Ah; 4,0Ah
Emergency operation time	1h, 2h, 3h
Battery recharging time	16h – 24h
Ambient temperature	-10 – +55°C **TE:** [1] -25 – +60°C
Cable connections	0,2 – 1,5 mm^2
The maximum length of cable to the LED module	1m
Supply cable cross-section area	0,5 – 1,5mm^2
Housing material	ABS

[1] TE – extended temperature range

BATTERY CAPACITY

Power	Emergency operation time		
	1h	2h	3h
1W	4,8V/1,0Ah	4,8V/1,0Ah	4,8V/1,0Ah
2W	4,8V/1,0Ah	4,8V/1,5Ah	4,8V/1,5Ah
3W	4,8V/1,5Ah	4,8V/2,5Ah	4,8V/4,0Ah
5W	4,8V/2,5Ah	4,8V/4,0Ah	–
6W	8,4V/1,5Ah	8,4V/2,5Ah	8,4V/4,0Ah
10W	8,4V/2,5Ah	8,4V/4,0Ah	–

NUMBER OF LEDs

Power	Number of LEDs (3V)											
	1	2	3	4	5	6	7	8	9	10	11	12
1W	●	●	●	●	●	●	●					
2W	●	●	●	●	●	●	●					
3W	●	●	●	●	●	●	●					
5W		●	●	●	●	●	●					
6W		●	●	●	●	●	●	●	●	●	●	●
10W					●	●	●	●	●	●	●	●

BATTERIES, CELLS

Batteries **Ni-Cd** (nickel-cadmium), **Ni-MH** (nickel-metal hydride), **Li-Ion** (lithium-ion) and **LiFePO4** (lithium-iron-phosphate) are used to supply emergency lighting power supply.

As standard, the battery leads are 20 cm outside the battery outline and are terminated with a N-type connector, adapted to the plug mounted in HYBRYD emergency power supply systems.

OPERATING CONDITIONS

	Ni-Cd	Ni-MH	Li-Ion	LiFePO4
Cell temperature during charging	0°C – +55°C	0°C – +55°C	0°C – +60°C	0°C – +60°C
Cell temperature during operation	-5° – +60°C	-5° – +60°C	-20° – +60°C	-20° – +60°C

Ni-Cd and Ni-MH battery obtain full electrical parameters after **three complete** charge and discharge cycles.

With the fulfillment of proper operating conditions, battery capacity measured by a 0.1C discharge current should not fall below **60%** of its rated capacity within a period of **48 months** from the date of manufacture.

The number of charge / discharge cycles during this time period should not exceed **300**.

The battery-powered system controls the battery voltage cut-off to protect against deep discharge.

BATTERY VOLTAGE AND CAPACITY

The batteries are made up of individual battery cells connected in series (**L**). Single cell voltage (**N**) is 1,2V (for Ni-Cd, Ni-MH), 3,7V (for Li-Ion) and 3,2V (for LiFePO4). The battery voltage is: **L** x **N**.

Depending on the type and power of the lighting source and the required lighting efficiency, HYBRYD emergency power supply systems are powered by a battery consisting of 2, 3, 4, 5 and 7 cells.

The battery capacity depends on the execution of the system's current and the required emergency operation time. The mostly used capacities are shown in the table below:

Ni-Cd	Ni-MH	Li-Ion	LiFePO4
1,5Ah	1,6Ah	0,7Ah	0,6Ah
2,5Ah	2,1Ah	2,2Ah	1,5Ah
4,0Ah	4,0Ah		2,0Ah

PACKING TYPE – MOUNTING

As standard, the batteries are packing in series or in parallel. If a different way of battery cells packing is required, it is recommended to contact HYBRYD.

Ni-Cd batteries of PAR and PAS type are mounted using clamps or cable ties. **Ni-MH** batteries of PAR, PAS, PAP, PAK, PAC, PAD type are mounted using cable ties.

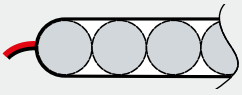
- Suitable for use in high temperature (-5° – +60°C)
- Selected packages are also available in thermostated version, which allows them to be used at reduced temperatures (from -20°C)
- Many ways of packing
- High current efficiency
- Low self-discharge
- Long life
- No memory effect (Li-Ion, LiFePO4)
- Fast charging process

The most commonly used types of packing:

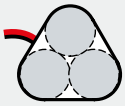
PAO type – (Ni-Cd, Ni-MH; 3,6-8,4V) battery packed in series, can be equipped with clamps

PAS type – (Ni-Cd, Ni-MH; 3,6-8,4V) battery packed in series, without clamp

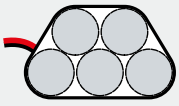
PAR type – (Ni-Cd, Ni-MH; 3,6-8,4V | Li-Ion; 3,7V | LiFePO4; 3,2V) battery packed in parallel



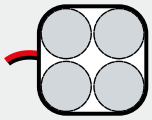
PAP type – (Ni-Cd, Ni-MH; 3,6V) 2 cells located in parallel and the third placed on them



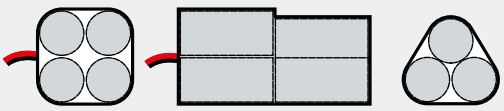
PAK type – (Ni-Cd, Ni-MH; 6,0V) 3 cells located in parallel and two placed on them



PAC type – (Ni-Cd, Ni-MH; 4,8V) 4 cells arranged in a cuboid

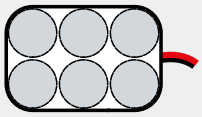


PAD type – (Ni-Cd, Ni-MH; 8,4V) double cuboid, arranged with 7 cells



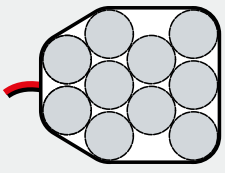
PAJ type – (Li-Ion; 3,7V | LiFePO4; 6,4V)

PAE type – (Ni-Cd, Ni-MH; 7,2V)

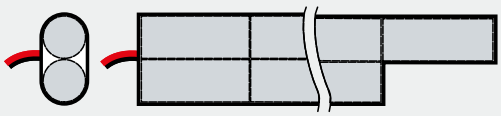


PAL type – (Ni-Cd, Ni-MH; 4,8V; 7,2V)

PAT type – (Ni-Cd, Ni-MH; 12,0V)



PAB type – (Ni-Cd, Ni-MH; 3,6V; 6,0V; 8,4V)



PAN type – (Ni-Cd, Ni-MH; 3,6V; 6,0V; 8,4V)

PAW type – (Ni-MH; 4,8V)

PROTECTIVE CAGES

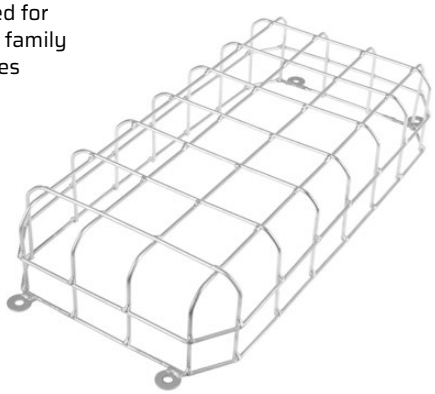
Protective cages manufactured by Hybryd are adapted to protect emergency luminaires against mechanical damage.

They are mounted with dowels directly to the ground.

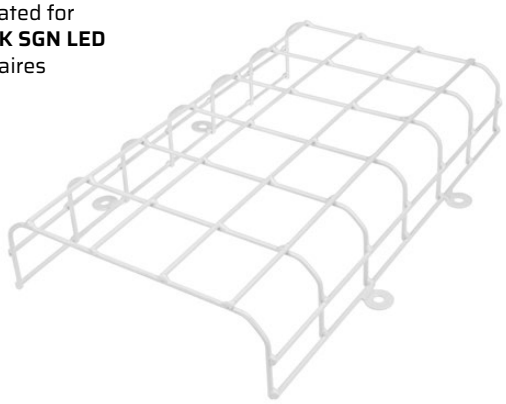
Made of steel, galvanized or powder coated.

Examples of implementation are presented below. Cages for other luminaires are also available. We invite you to consult our sales department.

Dedicated for **PRIMOS** family luminaires

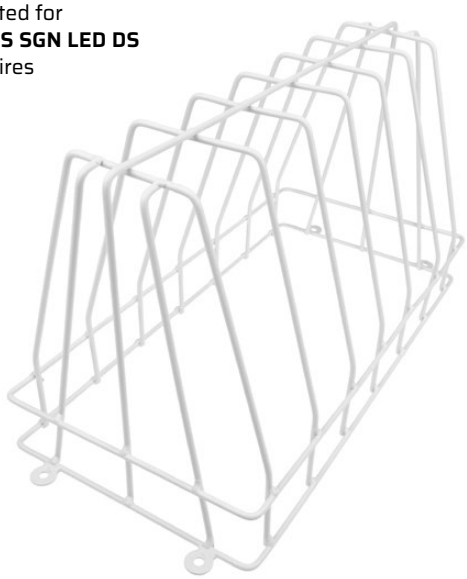


Dedicated for **SPARK SGN LED** luminaires

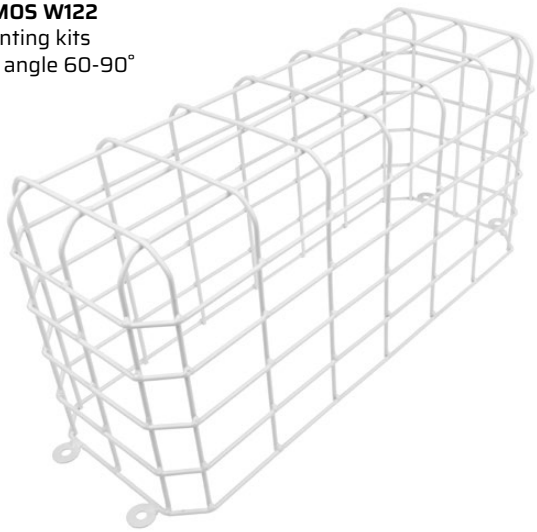


Dedicated for **OWA SU** luminaires

Dedicated for **PRIMOS SGN LED DS** luminaires



Dedicated for **PRIMOS W122** mounting kits with angle 60-90°



UNIVERSAL MOUNTING KITS

The following sets can be used with any luminaires, allowing their suspension.

The length is defined when ordering in variants every 5 cm.

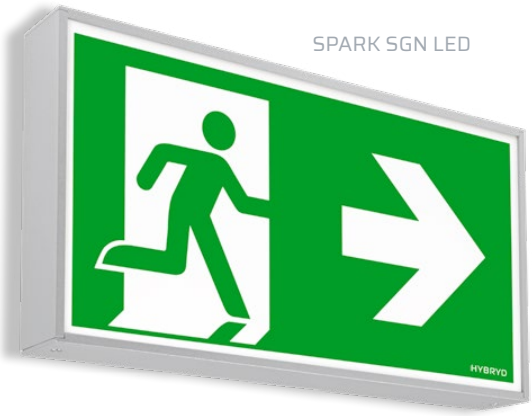
C113 – use to mount luminaires on the wire rope slings to the ceiling

C200 – use to mount luminaires on the cords to the ceiling

C201 – use to mount luminaires on the chains to the ceiling

C202 – mounting kit with hooks use to suspended luminaires

SPARK SGN LED



SPARK DYN LED

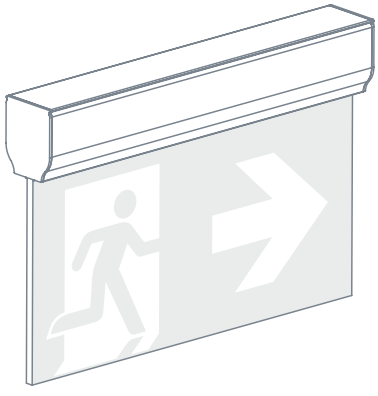
ALU SGN LED

PRIMOS SGN LED

UTILIGHT SGN LED

PROFILIGHT SGN LED

CRYSTAL SGN LED

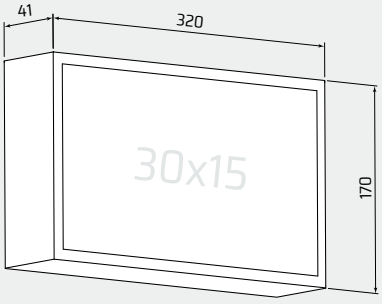


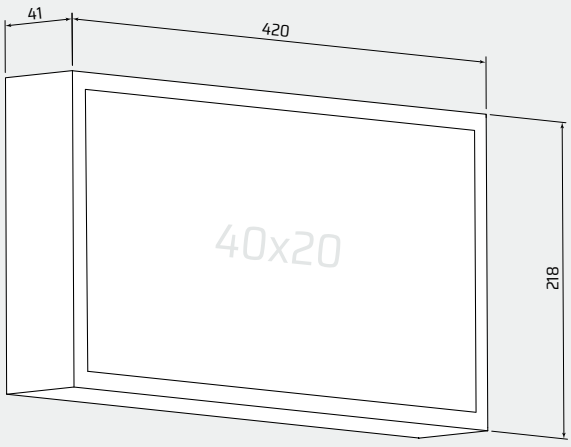
EXIT SIGN LUMINAIRES

SPARK SGN LED

SPARK SGN LED is a low power surface mounted LED luminaire designed for emergency escape lighting. Its main task is to indicate escape routes by means of internally illuminated evacuation sign in the ISO 7010 standard.

SPARK SGN LED is compatible with all emergency lighting systems offered by HYBRYD.





- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Wall mounting
- Housing is made of aluminum, lamp shade of PC
- Installation inside the building
- Two size variants

IP40

CNBOP-PIB 3334/2018

Safety sign visibility:

30x15cm 30m

40x20cm 40m

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP40
Light source		LED Strips [1]

Light colour temperature		5000K
Colour rendering index		70
Light source supply power		2W
Light source lifespan		> 50 000h
Battery type	**ST, AT, CT**	Ni-MH
Battery recharging time	**ST, AT, CT**	< 24h
Emergency operation time	**ST, AT, CT**	1h, 3h
Ambient temperature	**ST, AT, CT** **CB, CBAM** **LVAM**	+5 – +45°C -10 – +55°C -25 – +60°C
Through wiring		YES

[1] Non-exchangeable, but serviceable light source

MATERIAL

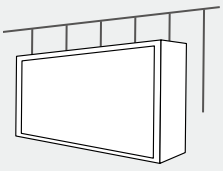
Housing material – powder coated aluminum

Housing colours – ○ RAL 9003, ◔ RAL 9006, ● RAL 9005, other on special order

Lamp shade material – PC

MOUNTING TYPE

W1 – back to the wall



AVAILABLE SYSTEMS

ST, **AT, CT, CB, CBAM, LVAM** – see page 6

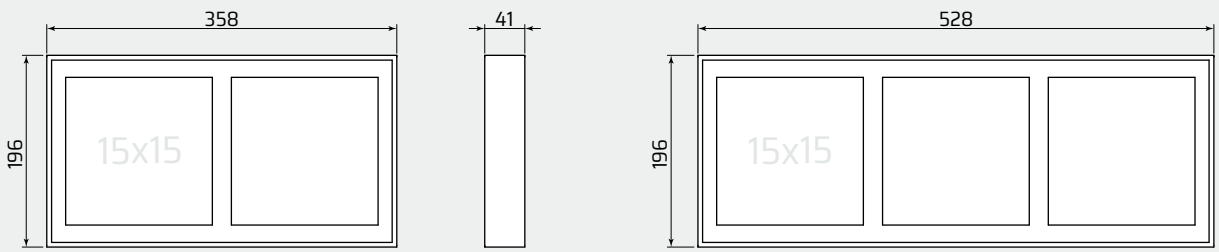
MOUNTING KIT

W137 – luminaires are mounted with its longer side to the ceiling or to the wall with the possibility of setting the angle

SPARK DYN LED

SPARK DYN LED is a Dynamic System Emergency Lighting luminaire based on **SPARK SGN LED** luminaire components.

The luminaire consists of two parts. The main part with cross/arrow modules, evacuation sign in the ISO 7010 standard, electronics and optional battery. The mounting part is variable and is dedicated to various types of mounting.



- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- A lot of mounting types
- Housing is made of aluminum, lamp shade of PMMA
- Installation inside the building
- A lot of size variants
- Modular construction
- One-sided and two-sided

IP40

Safety sign visibility:

30x15cm 30m

TECHNICAL DATA

Supply voltage	195-265V AC 50/60Hz
Protection class	I
Ingress protection	IP40
Light source	LED Modules [1]
Light source supply power	2-6W
Sign visibility	30m
Light source lifespan	> 50 000h
Battery type	Ni-Cd, Ni-MH

Battery voltage	6V; 7,2V; 8,4V
Battery recharging time	< 24h
Emergency operation time	1h; 2h; 3h
Ambient temperature	+5 – +40°C
Communication technology	CT-LOOP
Supply cable cross-section area	0,5 – 2,5 mm²
Through wiring	YES

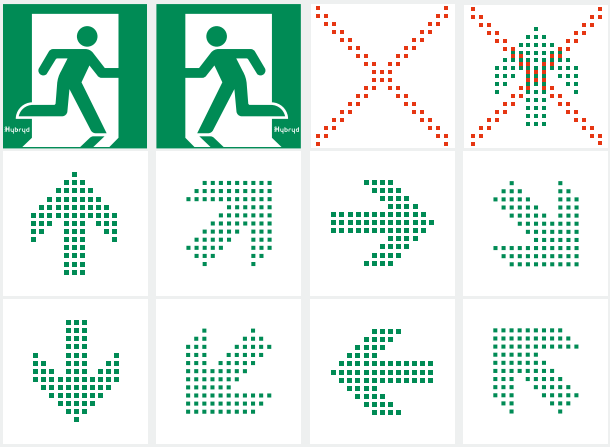
[1] Non-exchangeable, but serviceable light source; replaceable battery

MATERIAL

Housing material – powder coated aluminum, steel
Housing colours – RAL 9003, other on special order
Lamp shade material – PMMA

LUMINAIRE MESSAGES

The signs of arrow, cross and evacuation sign state are totally independently configurable for a given visual message. An arrow sign may be rotated every 45 degrees.

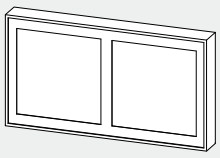


MOUNTING TYPE

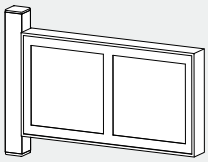
C27 – directly to the ceiling

W1 – back to the wall

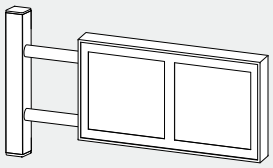
W34 – back to the wall; (cables introduced from the top)



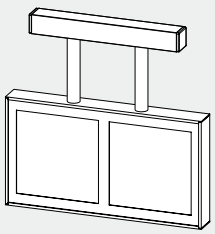
W16 – side to the wall (semaphore)



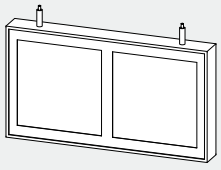
W33 – side to the wall (arm)



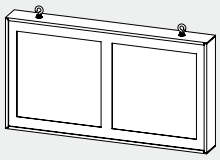
C29 – on a rigid suspension



C37 – on a flexible suspension – cable lock



C41 – on a flexible suspension – hooks

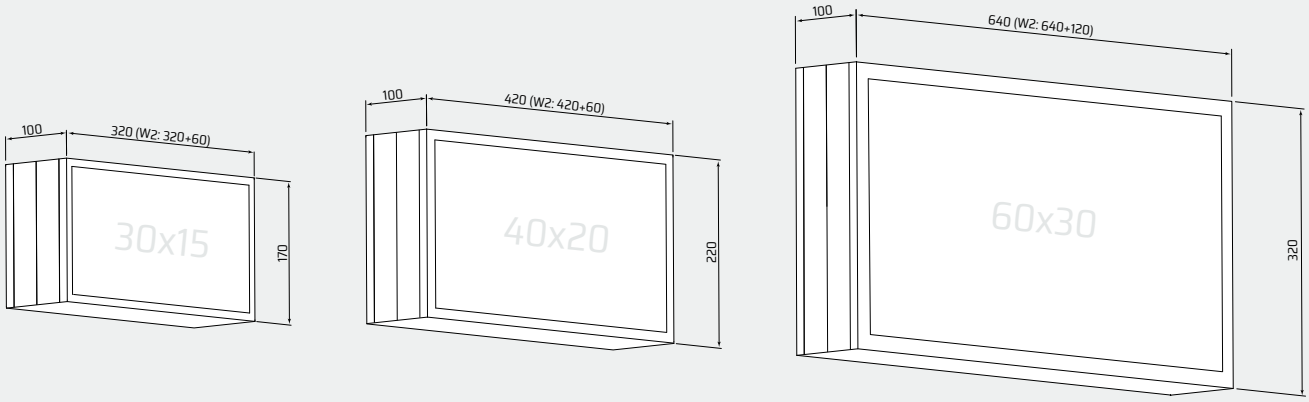


ALU SGN LED

ALU SGN LED is a low power surface mounted and suspended LED luminaire designed for emergency escape lighting. Its main task is to indicate escape routes by means of internally illuminated evacuation sign in the ISO 7010 standard.

There is also a **ALU LED4** luminaire version that allows you to additionally highlight the escape routes and fire points (see Special construction).

ALU SGN LED is compatible with all emergency lighting systems offered by HYBRYD.



- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- A lot of mounting types
- Housing is made of aluminum, lamp shade of PC
- Installation inside the building
- Three size variants

IP40

CNBOP-PIB 3334/2018

Safety sign visibility:

30x15cm — 30m

40x20cm — 40m

60x30cm — 60m

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP40
Light source		LED Strips [1]
Light colour temperature		5000K

Colour rendering index		70
Light source supply power		2W
Light source lifespan		> 50 000h
Battery type	**ST, AT, CT**	Ni-Cd, Ni-MH
Battery recharging time	**ST, AT, CT**	< 24h
Emergency operation time	**ST, AT, CT**	1h, 3h
Ambient temperature	**ST, AT, CT**	+5 – +45°C
	CB, CBAM	-10 – +55°C
	LVAM	-25 – +60°C
Through wiring		YES

[1] Non-exchangeable, but serviceable light source
[2] Safety sign dimensions

MATERIAL

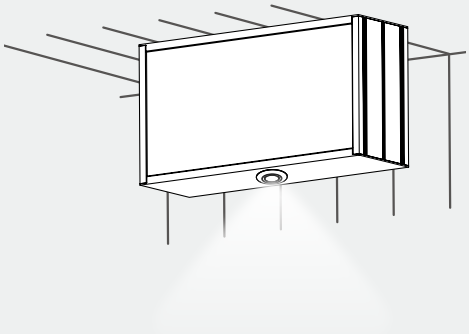
Housing material – powder coated aluminum

Housing colours – RAL 9003, other on special order

Lamp shade material – PC plate

SPECIAL CONSTRUCTION

ALU LED4 – exit sign and backlight (with 2W supply power)

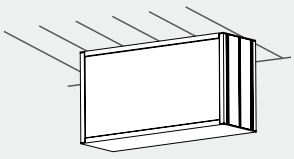


AVAILABLE SYSTEMS

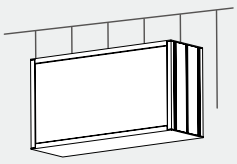
ST, **AT, CT, CB, CBAM, LVAM** – see page 6

MOUNTING TYPE

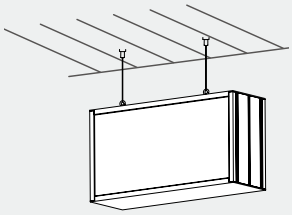
C2 – directly to the ceiling



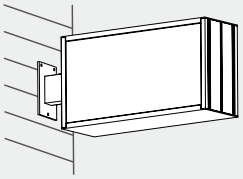
W1 – back to the wall



C2 + C202 (hooks) – suspended



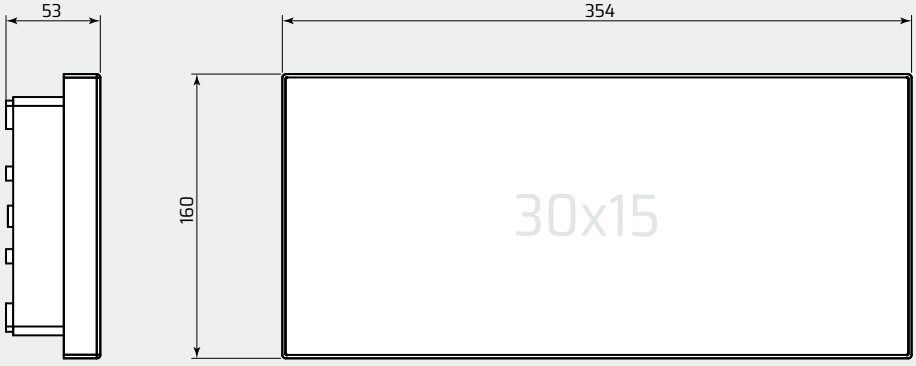
W2 – side to the wall



PRIMOS SGN LED

PRIMOS SGN LED is a low power surface mounted LED luminaire designed for emergency escape lighting. Its main task is to indicate escape routes by means of internally illuminated evacuation sign in the ISO 7010 standard.

It is available as single sided (**SS**) for wall mounting or as double sided (**DS**), intended for ceiling mounting.



- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- A lot of mounting types
- Housing is made of PC/ABS plastic
- Additional mounting kits

IP65

2844/2017

Safety sign visibility:

30x15cm 30m

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**AT, CT**	II
	CB, CBAM	I
	LVAM	III
Ingress protection		IP65
Light source		LED Strips [1]
Light colour temperature		5000K
Light source supply power		1W
Sign visibility		30m
Light source lifespan		> 50 000h

Battery type / voltage		Ni-Cd; Ni-MH / 4,8V
Battery capacity		1,0Ah; 1,6Ah
Battery recharging time		< 24h
Emergency operation time	**AT, CT**	1h, 3h
Ambient temperature	**AT, CT**	+5 – +45°C; **TE:** [2] -20 – +45°C
	CB, CBAM	-10 – +55°C; **TE:** [2] -25 – +65°C
	LVAM	-25 – +70°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

Housing material – PC/ABS mix

Housing colours – RAL 9016, other on special order

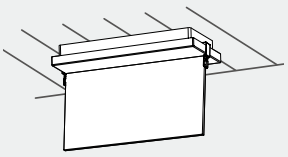
Lamp shade material – opal PC

AVAILABLE SYSTEMS

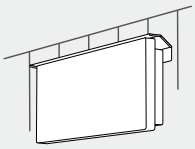
AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

ADDITIONAL ACCESORIES

Double-sided flag for PRIMOS **SS** ceiling mounted

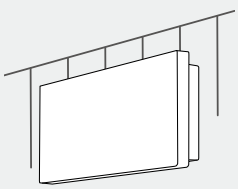


PRIMOS **W225** – increasing protection against weather conditions

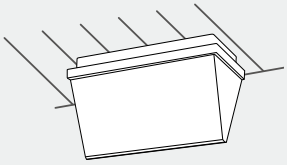


MOUNTING TYPE

Back to the wall



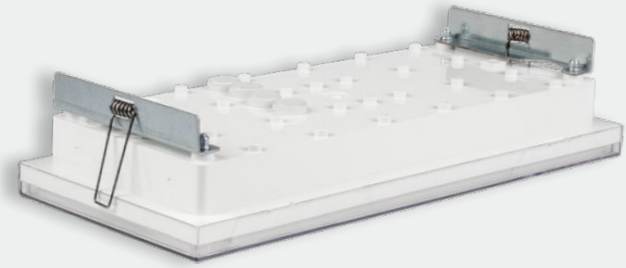
Directly to the ceiling



MOUNTING ACCESSORY FOR PRIMOS FAMILY OF LUMINAIRES

C101 – luminaires are suspended from the ceiling using cords or chains (ordered separately)
– see page 39

C114 – allows for external suspended mounting of luminaires using cords or chains (ordered separately)
– see page 39



C105 – it allows for recessed luminaire mounting

C106 – the C106 kit allows for mounting the luminaire to metal cable trays or other similar construction elements

W121 – allows for mounting of luminaire to wall or ceiling by the shorter side with angle adjustment

W221 – luminaires are mounted with its shorter side to the ceiling or to the wall with the possibility of setting the angle

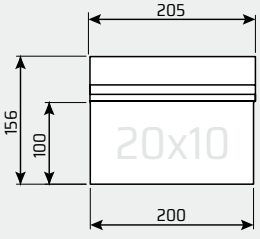
W122 – allows for mounting of luminaire to wall or ceiling by the longer side with angle adjustment

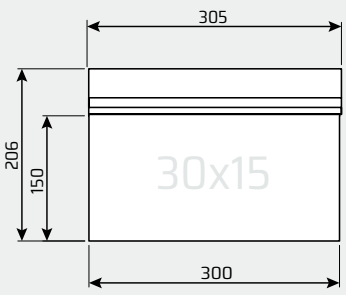
W222 – luminaires are mounted with its longer side to the ceiling or to the wall with the possibility of setting the angle

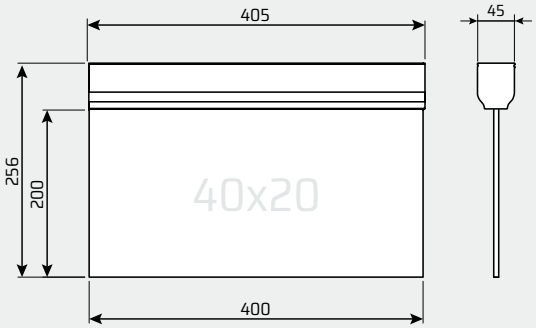
UTILIGHT SGN LED

UTILIGHT SGN LED is a low power LED luminaire designed for emergency escape lighting installed inside buildings. Depending on the mounting type allows for the surface, suspended or recessed installation. Its main task is to indicate escape routes by means of internally illuminated evacuation signs in the ISO 7010 standard.

The luminaire consists of two parts. The main part with electronics, battery, LED strip and lamp shade for evacuation sign is invariable of mounting method. The mounting part is variable and is dedicated to various types of mounting. Apart from the mounting method, the form of the luminaire is always the same. It is possible to order luminaire without a lamp shade with evacuation sign. It can be mounted after the luminaires installation. UTILIGHT is compatible with all emergency lighting systems offered by HYBRYD.







- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained or switched maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- A lot of mounting types
- Housing is made of aluminum, lamp shade of PMMA
- Installation inside the building
- Three size variants

IP40

2968/2017

Safety sign visibility:

20x10cm — 20m

30x15cm — 30m

40x20cm — 40m

TECHNICAL DATA

Supply voltage	**ST/AT/CT**	230V AC 50/60Hz
	CB/CBAM	230V AC 50/60Hz 170 – 275V DC
	LV/LVAM	15 – 32V DC
Current consumption	**CB/CBAM**	9mA @216V DC / 10mA @216V DC
	LV/LVAM	63mA @24V DC / 75mA @24V DC
Power consumption	**ST/AT/CT**	**M** [1]: charging 4W@230V AC, standby 2W@230V AC **NM** [2]: charging 2.3W@230V AC, standby 0.2W@230V AC
	CB	2W@230V AC
	CBAM	**M** [1]: 2.2W@230V AC **NM** [2]: 0.8W@230V AC
Power factor	**ST/AT/CT**	0.4
	CB/CBAM	0.42
Protection class	**ST/AT/CT/ CB/CBAM**	I
	LV/LVAM	III
Ingress protection		IP40, IP54 [3]
Light source		LED strip [4]

Light colour temperature		5000 – 5700K
Colour rendering index		70
Light source supply power		1W
Light source lifespan		> 50 000h
Battery type	**ST/AT/CT**	Li-Ion
Battery capacity	**ST/AT/CT**	0.7Ah; 2.2Ah; 4.4Ah
Battery charging time	**ST/AT/CT**	≤ 12h
Emergency operation time	**ST/AT/CT**	1h; 3h; 8h
Ambient temperature	**ST/AT/CT**	+5 – +40°C
	CB/CBAM	-25 – +55°C
	LV/LVAM	-25 – +60°C
Supply cable cross-section area		0.5 – 2.5mm^2
Supply cable diameter		≤ 17mm
Communication cable diameter		≤ 7mm
Suitable for through wiring		YES
Suitable for surface wiring		YES (C146 only)

[1] M – maintained mode; [2] NM – non-maintained mode; [3] Special version, 0054 variant; [4] Non-exchangeable but serviceable light source

MATERIAL

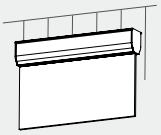
Housing material – powder coated aluminum

Housing colours – RAL 9003, other on special order

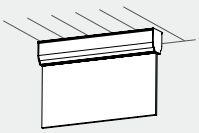
Lamp shade material – clear PMMA

MOUNTING TYPES

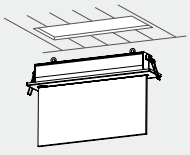
W140 – back to the wall



C142 – directly to the ceiling



C145 – recessed



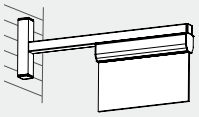
C146 – directly to the ceiling or back to the wall (for surface wiring only)

AVAILABLE SYSTEMS

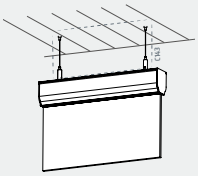
ST, AT, CT, CB, **CBAM, LV, LVAM** – see page 6

MOUNTING KITS

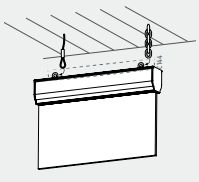
UTILIGHT W141 – semaphore



UTILIGHT C143 – suspended with cords and height adjustment *



UTILIGHT C144 – suspended with cords or chains *

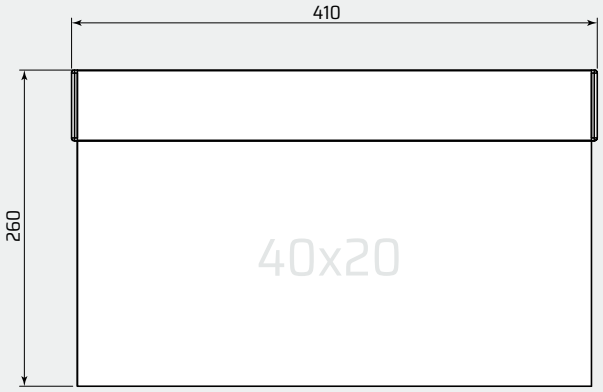


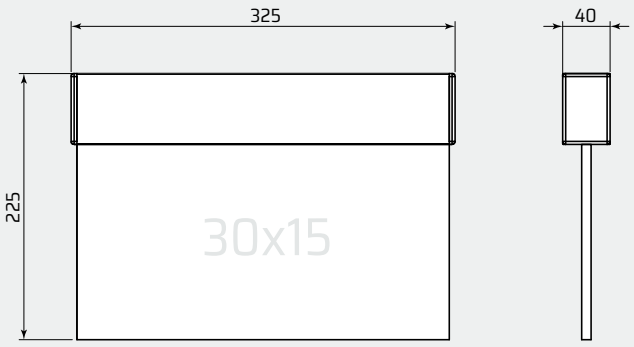
* – Cords and ceiling mounting kits can be ordered separately – see page 39

PROFILIGHT SGN LED

PROFILIGHT SGN LED is a low power LED luminaire designed for emergency escape lighting installed inside buildings. Depending on the mounting type allows for the surface, suspended or recessed installation. Its main task is to indicate escape routes by means of internally illuminated evacuation signs in the ISO 7010 standard.

The luminaire consists of two parts. The main part with electronics, battery, LED strip and lamp shade for evacuation sign is invariable of mounting method. The mounting part is variable and is dedicated to various types of mounting. It is possible to order luminaire without a lamp shade with evacuation sign. PROFILIGHT SGN LED is compatible with all emergency lighting systems offered by HYBRYD.





- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained operation mode
- A lot of mounting types
- Housing is made of aluminum, lamp shade of PMMA
- Installation inside the building

IP40

CNBOP-PIB 2915/2017

Safety sign visibility:

30x15cm 30m

40x20cm 40m

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP40
Light source		LED Strip [1]
Light colour temperature		5000K
Light source supply power		1W
Light source lifespan		> 50 000h

Battery voltage		4,8V
Battery type/capacity	**Ni-Cd** **Ni-MH**	1,0Ah 1,6Ah
Battery recharging time		< 24h
Emergency operation time	**ST, AT, CT**	1h, 3h
Ambient temperature	**ST, AT, CT**	+5 – +40°C; **TE:** [2] -20 – +40°C
	CB, CBAM	-10 – +55°C; **TE:** [2] -25 – +65°C
	LVAM	-25 – +70°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

Housing material – anodized or powder coated aluminum

Housing colours – ○ AAL – anodized aluminum,
○ RAL 9003, other on special order

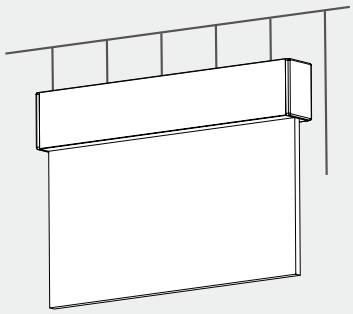
Lamp shade material – PMMA

AVAILABLE SYSTEMS

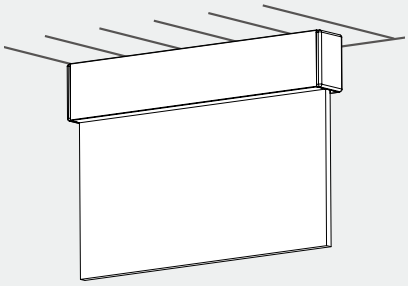
ST, AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

MOUNTING TYPE

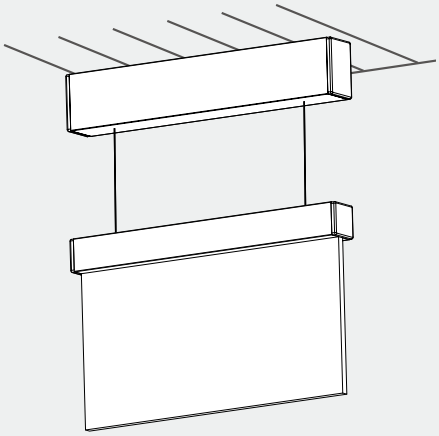
W4 – back to the wall



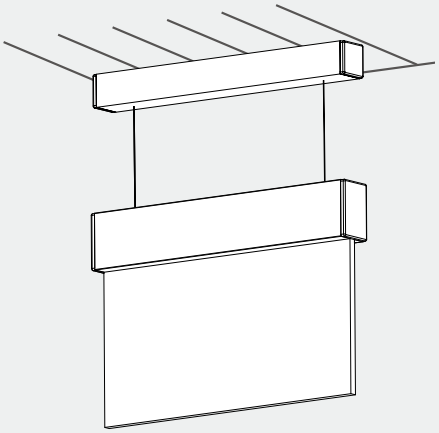
C32 – directly to the ceiling



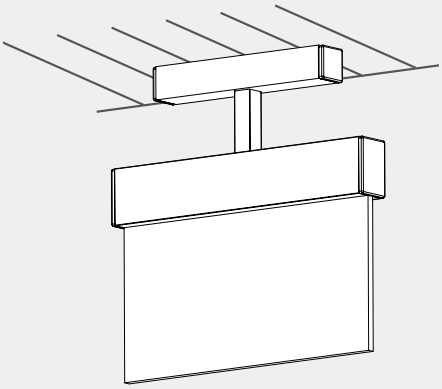
C24 – flexible suspended with electronics at the ceiling

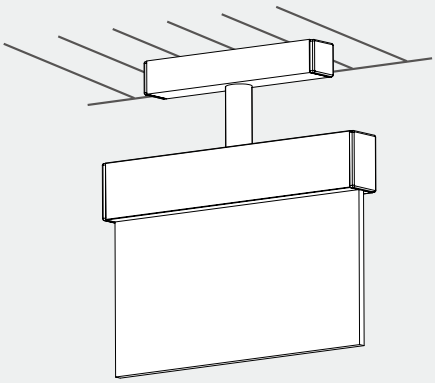


C25 – flexible suspended with electronics at the safety sign

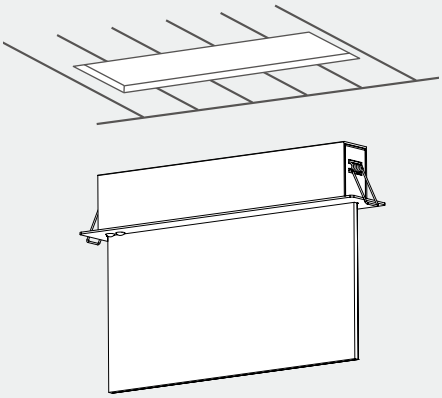


C26/C26K – rigid suspended (round/square vertical profile)



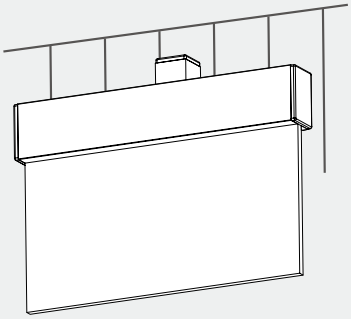


C5* – recessed

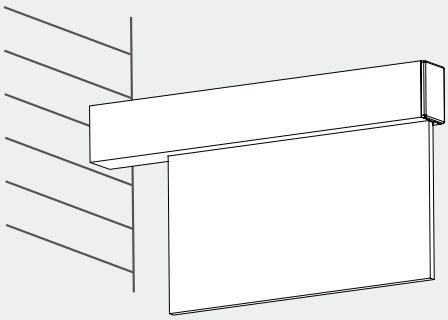


* – not available in anodized aluminum colour

W15 – back to the wall, with additional bracket

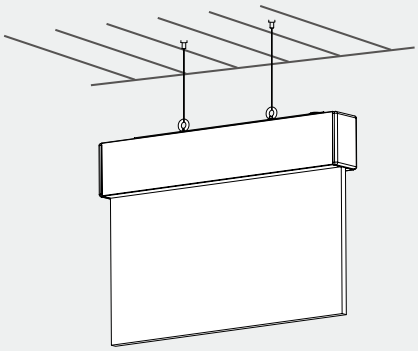


W17 – side to the wall

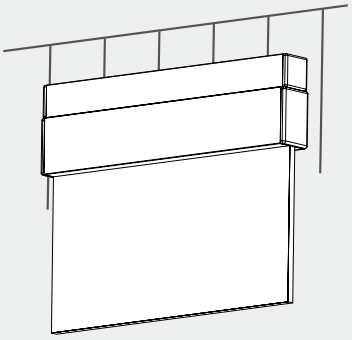


MOUNTING KITS

PROFILIGHT C103 – allows suspended mounting of the **C32** luminaire



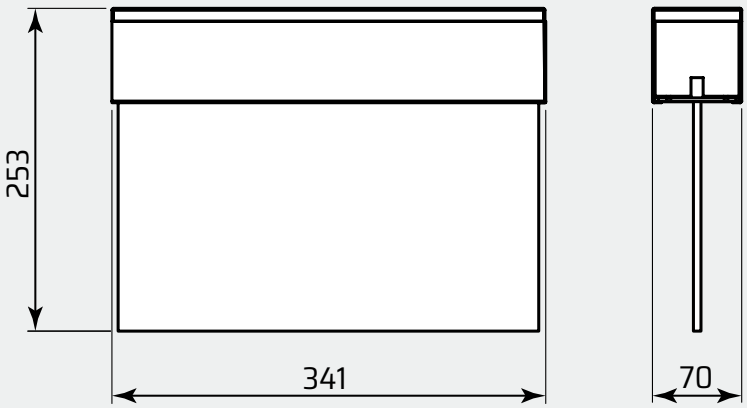
PROFILIGHT W134 – allows wall mounting of the **C32** luminaire



CRYSTAL SGN LED

CRYSTAL SGN LED is a low power LED luminaire designed for emergency escape lighting installed inside buildings. Depending on the mounting type allows for the surface, suspended or recessed installation. Its main task is to indicate escape routes by means of internally illuminated evacuation signs in the ISO 7010 standard.

CRYSTAL SGN LED is compatible with all emergency lighting systems offered by HYBRYD.



- Luminaire shows the directions of escape
- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained, switched maintained or night operation mode
- A lot of mounting types
- Housing is made of steel, lamp shade of PMMA
- Installation inside the building

IP20
IP40

CNBOP-PIB 2915/2017

Safety sign visibility:

30x15cm 30m

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP/20, IP40 [1]
Light source		LED Strip [2]
Light colour temperature		5000K
Light source supply power		1W
Sign visibility		32m
Light source lifespan		> 50 000h

Battery voltage		4,8V
Battery type/capacity	**Ni-Cd** **Ni-MH**	1,0Ah 1,6Ah
Battery recharging time		< 24h
Emergency operation time	**ST, AT, CT**	1h, 3h
Ambient temperature	**ST, AT, CT**	+5 – +40°C; **TE:** [3] -20 – +40°C
	CB, CBAM	-10 – +55°C; **TE:** [3] -25 – +65°C
	LVAM	-25 – +70°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Depends on mounting type; [2] Non-exchangeable, but serviceable light source;
[3] TE – extended temperature range

MATERIAL

Housing material – anodized or powder coated aluminum

Housing colours – AAL – anodized aluminum, RAL 9003, other on special order

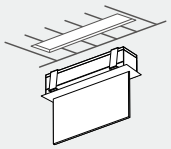
Lamp shade material – PMMA

AVAILABLE SYSTEMS

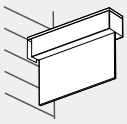
ST, AT, CT, CB, CBAM, LVAM – see page 6

MOUNTING TYPE

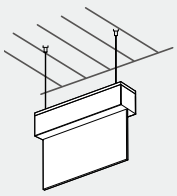
C5 – recessed



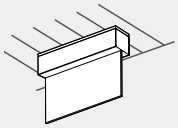
W3 – side to the wall



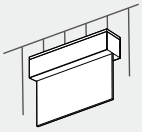
C7 – flexible suspended



C6 – directly to the ceiling



W4 – back to the wall



PRIMOS CLA LED

PRIMOS II LED

PRIMOS CLA LED 0140

KWADRA FL/SU LED

OWA FL LED

OWA ALSU LED

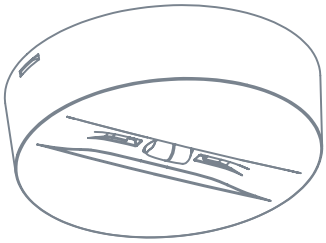
OWA ALFA LED

OWA SU LED

ATOM FL LED

ORBIT SU LED

CRYSTAL LED



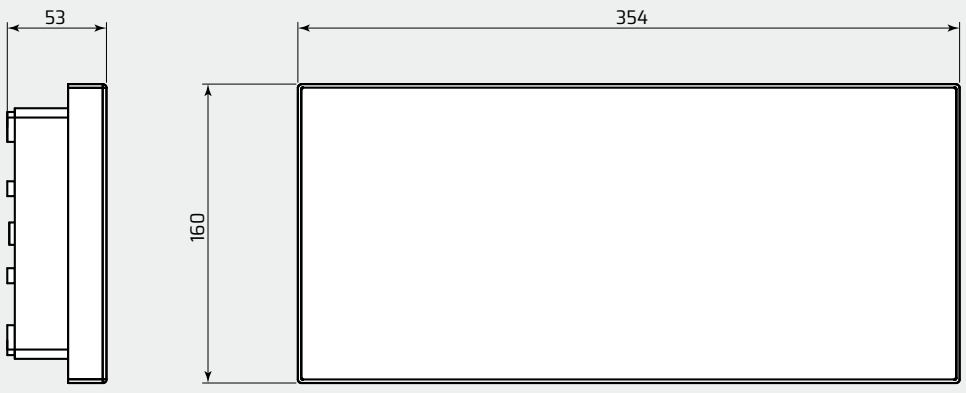
EMERGENCY LUMINAIRES

PRIMOS II LED

PRIMOS II is a high power and high efficiency surface mounted LED luminaire, designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

A high luminous flux makes it possible to use PRIMOS II up to a height of 14 metres.

PRIMOS II luminaire is compatible with all emergency lighting systems offered by HYBRYD.



- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Adapted to high altitudes
- Housing is made of plastic
- Two light source supply power (5W/7W)
- Wide range of optics
- Possibility to mounting outside the building with additional mounting types C114, W221 or W222

CE IP65

CNBOP-PIB 2844/2017

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	10–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	II
	LVAM	III
Ingress protection		IP65
Light source		LED Modules [1]
Light colour temperature		5700K
Light source supply power		5W; 7W
Minimum luminous flux (5W/7W)	**RO**	553/647 lm
	RP	547/640 lm
	RPHV	553/647 lm
	AR	535/626 lm
	AP	553/647 lm

Light source lifespan		> 50 000h
Battery type / voltage	**Ni-Cd**	4,8V
	Ni-MH	8,4V
Battery capacity		1,5; 1,6; 2,1; 2,5; 4,0Ah
Battery recharging time		< 24h
Emergency operation time	**ST, AT, CT**	1h, 3h
Ambient temperature (5W/7W)	**ST, AT, CT**	+5 – +35°C
		TE: [2] -20 – +35°C
	CB, CBAM, LVAM	-10 – +45°C
		TE: [2] -25 – +50°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

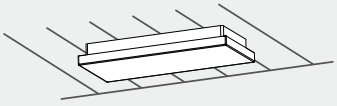
Housing material – PC/ABS mix

Housing colours – ○ RAL 9016, ● RAL 9005, other on special order

Lamp shade material – PC

MOUNTING TYPE

Directly to the ceiling

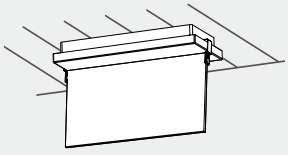


AVAILABLE SYSTEMS

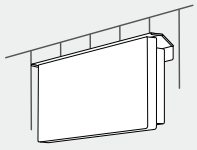
AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

ADDITIONAL ACCESORIES

Double-sided flag for PRIMOS **SS** ceiling mounted



PRIMOS **W225** – increasing protection against weather conditions

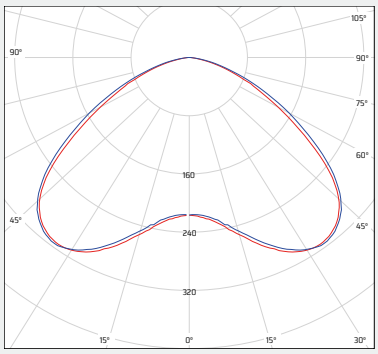


MOUNTING KITS

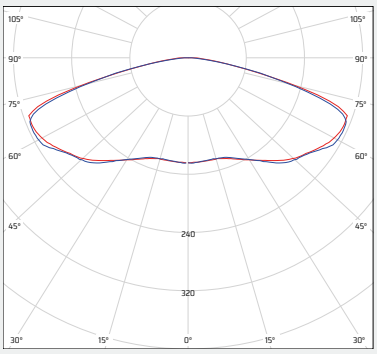
see page 50

LIGHT DISTRIBUTION CURVES

AREA (AR)

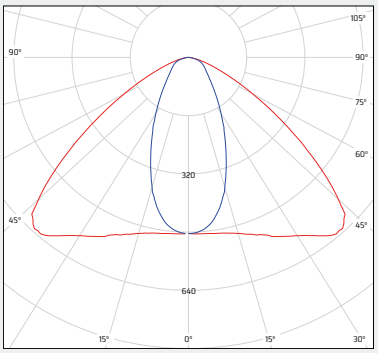


AREA PLUS (AP)

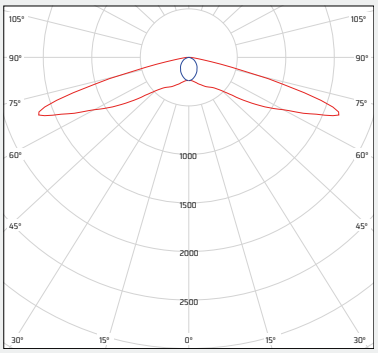


cd/klm
C0 - C180
C90 - C270

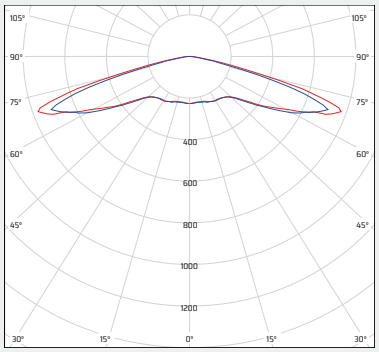
ROAD (RO)



ROAD PLUS (RP)



ROAD PLUS H/V (RPHV)



DISTANCE TABLES

Tables for emergency routes

ROAD PLUS; 7W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	8,4	18,7	13,9	9,2	3,8
2,5	9,8	21,8	16,1	10,2	4,2
3	11,2	24,7	17,8	10,9	4,4
3,5	12,4	27,5	19,6	11,7	4,7
4	13,5	30,4	21,3	12,2	4,8
4,5	14,6	32,9	22,8	12,7	5,0
5	15,5	35,2	24,2	13,1	5,1
5,5	16,3	37,5	25,5	13,5	5,1
6	17,0	39,6	26,8	13,8	5,1
6,5	17,6	41,7	27,8	14,0	5,0
7	17,8	43,6	28,8	14,2	5,0
7,5	17,5	45,3	29,6	14,3	4,9
8	17,1	46,9	30,1	14,4	4,8
8,5	16,3	48,2	30,0	14,4	4,6
9	15,7	49,0	29,7	14,2	4,3
9,5	15,0	49,4	29,2	14,1	4,0
10	13,5	49,5	28,6	13,9	3,7
10,5	9,4	49,4	28,0	13,7	3,2
11	8,2	48,6	24,3	13,6	2,7
11,5	7,3	46,6	22,4	13,3	2,0
12	1,4	45,2	21,1	12,9	0,6

ROAD PLUS H/V; 7W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,7	17,2	16,7	16,3	7,3
2,5	9,0	20,0	19,5	19,0	8,5
3	10,0	22,6	22,1	21,5	9,5
3,5	10,9	25,1	24,5	23,9	10,4
4	11,7	27,3	26,6	26,0	11,1
4,5	12,0	29,1	28,5	27,9	11,7
5	12,0	30,9	30,2	29,5	11,7
5,5	11,5	32,4	31,7	31,0	11,6
6	10,9	33,4	32,6	32,2	11,4
6,5	10,3	33,9	33,0	32,9	10,8
7	9,2	33,8	33,1	33,1	9,7
7,5	8,0	32,8	32,9	32,9	8,1
8	7,4	32,1	32,1	32,5	7,5
8,5	7,0	30,7	31,4	32,1	7,0
9	6,5	29,7	30,1	30,7	6,5
9,5	6,1	27,7	28,3	29,0	6,0
10	5,5	25,3	26,0	26,6	5,6
10,5	4,7	22,9	23,1	23,4	4,7
11	3,3	21,5	21,6	21,7	3,5
11,5	1,5	20,5	20,6	20,6	1,8

ROAD; 5W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	4,1	9,4	8,2	7,0	2,8
2,5	5,1	11,7	10,2	8,7	3,4
3	5,7	13,1	11,1	9,2	3,6
3,5	6,2	14,3	12,0	9,6	3,8
4	6,7	15,5	12,7	10,0	3,9
4,5	7,2	16,6	13,5	10,3	4,0
5	7,6	17,6	14,2	10,6	4,1
5,5	8,0	18,6	14,8	10,9	4,2
6	8,3	19,5	15,4	11,2	4,3
6,5	8,7	20,4	15,9	11,4	4,4
7	9,0	21,3	16,5	11,6	4,4
7,5	9,3	22,1	16,9	11,8	4,5
8	9,6	22,8	17,4	12,0	4,5
8,5	9,8	23,5	17,8	12,2	4,5
9	10,0	24,3	18,3	12,3	4,5
9,5	10,2	24,9	18,6	12,4	4,4
10	10,3	25,5	19,0	12,5	4,4
10,5	10,5	26,1	19,3	12,6	4,3
11	10,4	26,6	19,6	12,6	4,2
11,5	10,3	27,2	19,8	12,6	4,1
12	10,1	27,6	20,1	12,6	4,0
12,5	9,6	28,1	20,2	12,6	3,8
13	8,9	28,4	20,4	12,5	3,6
13,5	8,1	28,8	20,5	12,4	3,4
14	7,3	29,1	20,3	12,3	3,1
14,5	6,0	29,3	19,7	12,2	2,7
15	4,5	28,8	19,0	12,0	2,1
15,5	2,1	28,3	18,2	11,8	1,1

ROAD PLUS H/V; 5W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	7,5	16,8	16,4	15,9	7,2
2,5	8,7	19,5	19,1	18,6	8,3
3	9,7	22,1	21,6	21,0	9,3
3,5	10,5	24,5	23,9	23,3	10,1
4	11,1	26,4	25,8	25,3	10,7
4,5	11,2	28,2	27,6	27,0	10,9
5	10,8	29,8	29,2	28,5	10,8
5,5	10,3	31,0	30,2	29,8	10,7
6	9,7	31,5	30,7	30,5	10,1
6,5	8,5	31,4	30,8	30,8	9,1
7	7,4	30,5	30,6	30,6	7,5
7,5	6,8	29,8	29,8	30,2	6,9
8	6,4	28,4	29,0	29,6	6,4
8,5	6,0	27,1	27,6	28,0	5,9
9	5,5	25,2	25,5	26,3	5,5
9,5	4,9	22,4	23,0	23,5	4,9
10	3,7	20,5	20,7	20,8	4,0
10,5	2,2	19,4	19,5	19,6	2,4

ROAD PLUS; 5W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	8,2	18,3	13,6	8,9	3,6
2,5	9,7	21,3	15,6	9,7	4,0
3	10,9	24,1	17,3	10,4	4,2
3,5	12,1	27,0	19,1	11,1	4,4
4	13,2	29,7	20,6	11,7	4,6
4,5	14,2	32,1	22,1	12,1	4,7
5	15,0	34,3	23,5	12,5	4,7
5,5	15,8	36,5	24,7	12,8	4,8
6	16,3	38,6	25,8	13,0	4,7
6,5	16,5	40,5	26,8	13,2	4,6
7	16,3	42,2	27,5	13,3	4,5
7,5	15,8	43,8	28,1	13,4	4,4
8	15,0	45,0	27,8	13,4	4,2
8,5	14,4	45,7	27,5	13,2	4,0
9	13,6	46,1	27,0	13,1	3,6
9,5	10,0	46,1	26,4	12,9	3,2
10	8,1	45,7	24,0	12,7	2,8
10,5	7,2	44,0	21,5	12,5	2,2
11	5,9	42,5	20,0	12,1	1,2

ROAD; 7W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	4,1	9,4	8,2	7,0	2,8
2,5	5,1	11,8	10,3	8,8	3,5
3	5,9	13,4	11,5	9,7	3,8
3,5	6,4	14,7	12,4	10,1	4,0
4	6,9	15,9	13,2	10,5	4,1
4,5	7,4	17,1	14,0	10,9	4,2
5	7,8	18,2	14,7	11,2	4,4
5,5	8,3	19,2	15,4	11,5	4,5
6	8,6	20,2	16,0	11,8	4,6
6,5	9,0	21,1	16,6	12,0	4,7
7	9,4	22,0	17,1	12,2	4,7
7,5	9,7	22,8	17,7	12,5	4,8
8	10,0	23,6	18,1	12,7	4,8
8,5	10,2	24,4	18,6	12,9	4,8
9	10,5	25,1	19,0	13,0	4,8
9,5	10,7	25,8	19,5	13,2	4,8
10	10,9	26,5	19,9	13,3	4,8
10,5	11,0	27,1	20,2	13,4	4,7
11	11,2	27,7	20,6	13,5	4,7
11,5	11,2	28,3	20,9	13,5	4,6
12	11,2	28,8	21,1	13,5	4,5
12,5	11,0	29,3	21,4	13,5	4,4
13	10,7	29,8	21,6	13,6	4,2
13,5	10,2	30,2	21,8	13,5	4,1
14	9,5	30,6	21,9	13,4	3,9
14,5	8,7	30,9	22,0	13,3	3,6
15	7,9	31,2	21,8	13,2	3,3
15,5	6,7	31,4	21,3	13,1	2,9
16	5,3	31,0	20,6	13,0	2,4
16,5	3,1	30,6	19,9	12,8	1,6

The distance tables for flat escape routes are based on the following parameters: • Maintenance factor: 0,77 • The minimum illuminance on centerline: 1,00 lx • Minimum illuminance on half of escape route width: 0,50 lx • Diversity on the centre line max.: 40:1 • Escape routes width: 2,00 m

LEGEND:

↕ – luminaire mounting height; **‡↔⟲** – distance between the wall and the luminaire; **⟲↔⟲** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔⟲** – distance between the luminaires placed longer angle of light perpendicular to each other; **⟲↔⟲** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔⟲** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

Tables for open area lighting

AREA PLUS; 5W; 5700K

↕ [m]	↔	⟷
2	5,7	13,2
2,5	6,4	15,1
3	6,9	16,6
3,5	7,2	17,9
4	7,4	19,0
4,5	7,5	19,7
5	7,6	20,2
5,5	7,6	20,6
6	7,6	20,9
6,5	7,6	21,2
7	7,5	21,4
7,5	7,4	21,5
8	7,3	21,5
8,5	7,0	21,5
9	6,7	21,4
9,5	6,0	21,3
10	5,2	21,1
10,5	4,3	20,9
11	3,2	20,7
11,5	2,0	20,4

AREA; 5W; 5700K

↕ [m]	↔	⟷
2	4,0	9,3
2,5	5,0	11,6
3	5,5	12,9
3,5	5,9	14,0
4	6,3	15,0
4,5	6,7	15,9
5	7,0	16,8
5,5	7,4	17,6
6	7,7	18,4
6,5	7,9	19,1
7	8,1	19,8
7,5	8,4	20,4
8	8,5	21,0
8,5	8,7	21,6
9	8,8	22,1
9,5	8,9	22,6
10	8,9	23,1
10,5	8,9	23,5
11	8,9	23,9
11,5	8,8	24,2
12	8,7	24,5
12,5	8,6	24,7
13	8,4	24,9
13,5	8,2	25,0
14	7,9	25,1
14,5	7,4	25,2
15	6,8	25,2

AREA PLUS; 7W; 5700K

↕ [m]	↔	⟷
2	5,8	13,4
2,5	6,6	15,5
3	7,2	17,2
3,5	7,5	18,6
4	7,8	19,8
4,5	7,9	20,7
5	8,1	21,4
5,5	8,1	21,8
6	8,2	22,2
6,5	8,2	22,5
7	8,1	22,7
7,5	8,1	22,9
8	7,9	23,0
8,5	7,8	23,1
9	7,6	23,1
9,5	7,3	23,0
10	6,7	22,9
10,5	5,9	22,7
11	5,0	22,5
11,5	4,0	22,3
12	2,9	22,0
12,5	1,5	21,6

AREA; 7W; 5700K

↕ [m]	↔	⟷
2	4,0	9,3
2,5	5,0	11,6
3	5,7	13,3
3,5	6,1	14,5
4	6,6	15,5
4,5	7,0	16,5
5	7,3	17,4
5,5	7,6	18,3
6	7,9	19,1
6,5	8,2	19,8
7	8,5	20,5
7,5	8,7	21,2
8	8,9	21,8
8,5	9,1	22,5
9	9,3	23,0
9,5	9,4	23,6
10	9,5	24,1
10,5	9,5	24,5
11	9,6	25,0
11,5	9,6	25,4
12	9,5	25,7
12,5	9,4	26,0
13	9,3	26,3
13,5	9,2	26,5
14	9,0	26,7
14,5	8,8	26,8
15	8,4	26,9
15,5	8,0	27,0
16	7,4	27,0

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

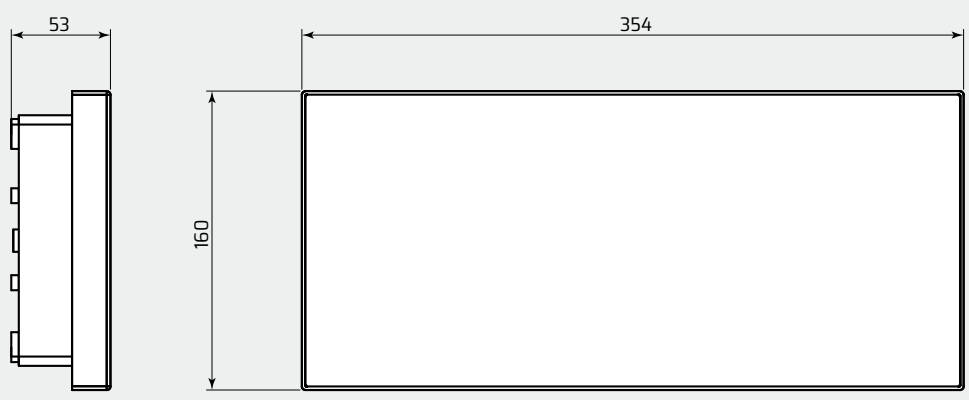
LEGEND:

↕ – luminaire mounting height; **↔** – distance between the wall and the luminaire; **⟷** – distance between the luminaires

PRIMOS CLA LED

PRIMOS CLA LED is a high power and high efficiency surface mounted LED luminaire designed for emergency lighting installed inside buildings. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

Opal diffuser and special optics inside allow to use PRIMOS LED where direct human eye contact occurs. The diffuser is evenly illuminated on a large area.



- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Housing is made of plastic
- Three light source supply power (2W/5W/7W)
- Possibility to mounting outside the building with additional mounting types C114, W221 or W222

IP65

2844/2017

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	10–32V DC
Protection class	**AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP65
Light source		LED Modules [1]
Light colour temperature		5700K
Light source supply power		2W, 5W, 7W
Minimum luminous flux	**2W/5W/7W**	200/300/360 lm
Light source lifespan		> 50 000h
Battery type / voltage	**Ni-Cd**	4,8V
	Ni-MH	8,4V

Battery capacity		1,0; 1,5; 1,6; 2,1; 2,5; 4,0Ah
Battery recharging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature (2W)	**AT, CT**	+5 – +45°C; **TE:** [2] -20 – +45°C
	CB, CBAM, LVAM	-10 – +55°C; **TE:** [2] -25 – +60°C
Ambient temperature (5W/7W)	**AT, CT**	+5 – +35°C; **TE:** [2] -20 – +35°C
	CB, CBAM, LVAM	-10 – +45°C; **TE:** [2] -25 – +50°C
Supply cable cross-section area		0,5 – 2,5mm^2
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

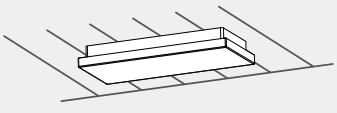
Housing material – PC/ABS mix

Housing colours – RAL 9003, other on special order

Lamp shade material – opal PC

MOUNTING TYPE

Directly to the ceiling

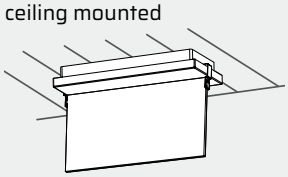


AVAILABLE SYSTEMS

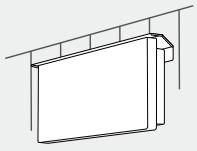
AT, CT, CB, CBAM, LVAM – see page 6

ADDITIONAL ACCESORIES

Double-sided flag for PRIMOS **SS** ceiling mounted



PRIMOS **W225** – increasing protection against weather conditions

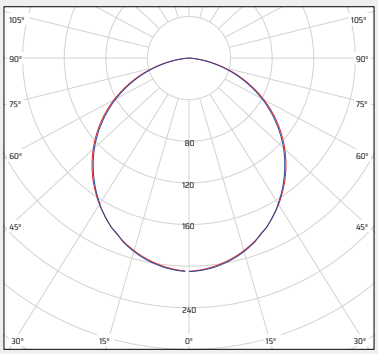


MOUNTING KITS

see page 50

LIGHT DISTRIBUTION CURVES

CLASSIC (CL)



cd/klm — C0 – C180 — C90 – C270

DISTANCE TABLES

Tables for open area lighting

CLASSIC; 2W; 5700K

↕ [m]	↔0	0↔0
2	2,8	6,8
2,5	3,0	7,4
3	3,1	7,9
3,5	3,2	8,3
4	3,2	8,7
4,5	3,2	8,8
5	3,1	9,0
5,5	3,0	9,1
6	2,8	9,1
6,5	2,5	9,0
7	2,1	8,8
7,5	1,5	8,6

CLASSIC; 5W; 5700K

↕ [m]	↔0	0↔0
2	3,1	7,6
2,5	3,4	8,4
3	3,6	9,0
3,5	3,8	9,6
4	3,9	10,0
4,5	3,9	10,4
5	4,0	10,6
5,5	3,9	10,9
6	3,9	11,0
6,5	3,7	11,1
7	3,6	11,1
7,5	3,3	11,1
8	3,0	11,0
8,5	2,7	10,8
9	2,1	10,6
9,5	1,3	10,3

CLASSIC; 7W; 5700K

↕ [m]	↔0	0↔0
2	3,3	7,9
2,5	3,6	8,8
3	3,9	9,5
3,5	4,0	10,1
4	4,2	10,6
4,5	4,3	11,1
5	4,3	11,4
5,5	4,3	11,7
6	4,3	11,9
6,5	4,2	12,0
7	4,1	12,1
7,5	4,0	12,2
8	3,8	12,2
8,5	3,5	12,1
9	3,2	12,0
9,5	2,7	11,8
10	2,1	11,5
10,5	1,2	11,2

The distance tables for open area lighting are based on the following parameters:

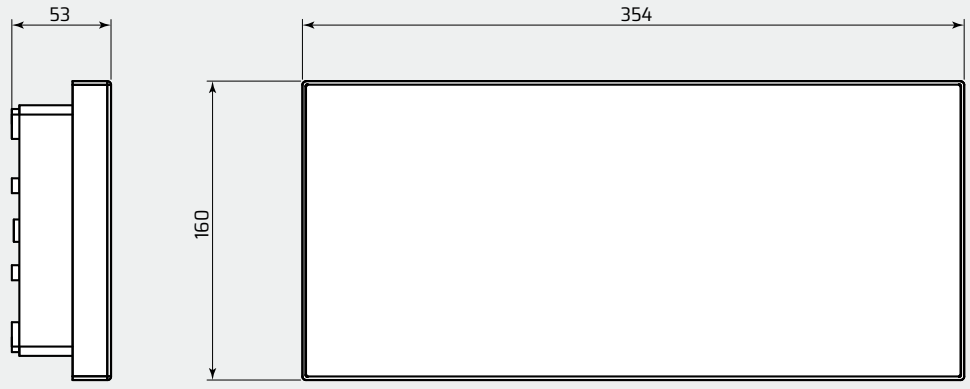
- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

↕ – luminaire mounting height; **↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires

PRIMOS CLA LED 0140

PRIMOS CLA LED is a high power and high efficiency surface mounted LED luminaire designed for emergency lighting installed inside buildings. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.



- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes and open spaces
- Housing is made of plastic
- Additional mounting types
- Possibility to mounting outside the building with additional mounting types C114, W221 or W222

IP65

2844/2017

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
Protection class	**AT, CT**	I
Ingress protection		IP65
Light source		LED Strip [1]
Light colour temperature		5700K
Light source supply power		1W
Minimum luminous flux		70lm
Light source lifespan		> 50 000h
Battery type / voltage	**Ni-Cd**	4,8V
Battery capacity		1,0Ah

Battery recharging time		< 24h
Emergency operation time		1h; 3h
Ambient temperature	**AT, CT**	+5 – +35°C; **TE:** [2] -20 – +35°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

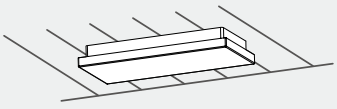
Housing material – PC/ABS mix

Housing colours – RAL 9003, other on special order

Lamp shade material – PC

MOUNTING TYPE

Directly to the ceiling

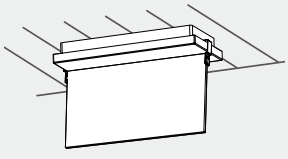


AVAILABLE SYSTEMS

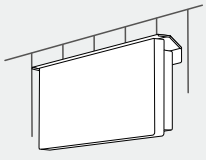
AT, CT, CB, CBAM, LVAM – see page 6

ADDITIONAL ACCESORIES

Double-sided flag for PRIMOS **SS** ceiling mounted



PRIMOS **W225** – increasing protection against weather conditions

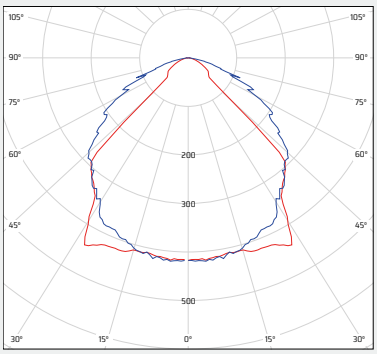


MOUNTING KITS

see page 50

LIGHT DISTRIBUTION CURVES

CLASSIC (CL)



cd/klm — C0 – C180 — C90 – C270

DISTANCE TABLES

Tables for emergency routes

CLASSIC; 1W; 5700K

↕ [m]	↔	↔	↔	↔	↔
2	2,0	4,1	4,7	5,9	2,3
2,5	2,4	5,1	5,3	6,3	2,4
3	2,3	5,7	5,7	6,6	2,3
3,5	2,3	6,0	6,0	6,6	2,1
4	2,2	6,5	6,3	6,5	1,8
4,5	1,2	6,3	6,2	6,2	1,2

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

LEGEND:

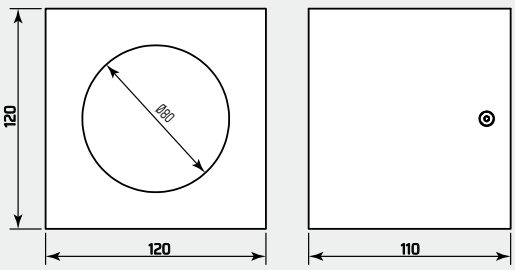
↕ – luminaire mounting height; ↔ – distance between the wall and the luminaire; ↔ – distance between the luminaires; ↔ – distance between the wall and the luminaire placed longer angle of light parallel to the wall; ↔ – distance between the luminaires placed longer angle of light parallel to each other; ↔ – distance between the luminaires placed longer angle of light perpendicular to each other; ↔ – distance between the luminaires placed shorter angle of light parallel to each other; ↔ – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

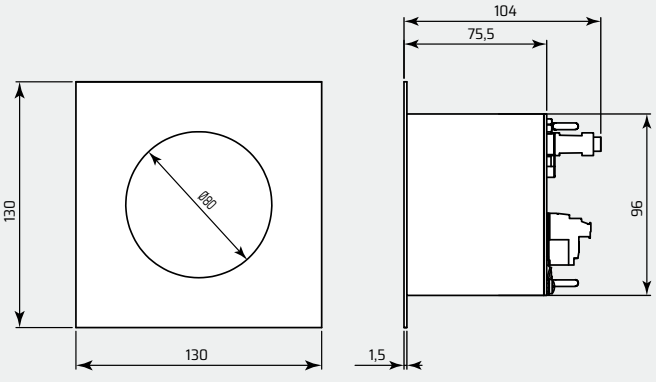
KWADRA FL/SU LED

KWADRA is a high efficiency surface mounted or recessed LED luminaire designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

SU

FL





- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Housing is made of steel
- A lot of mounting types
- Wide range of optics

IP20/IP65
IP54, IP65

CNBOP-PIB 2474/2015

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	6–32V DC
Protection class	**AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection	**SU**	IP54 or IP65
	FL	IP20/IP65
Light source		LED Module [1]
Light colour temperature		5700K
Light source supply power		3W
Minimum luminous flux	**RO**	321lm
	RP	325lm
	AR	282lm
	SD	321lm

Light source lifespan		> 50 000h
Battery type / voltage	**Ni-MH**	4,8V
Battery capacity		1,6; 2,1; 4,0Ah
Battery recharging time		< 24h
Emergency operation time (taw)		1h, 3h
Ambient temperature	**AT, CT**	+5 – +35°C;
	CB, CBAM	-10 – +35°C; **TE:** [2] -25 – +40°C
	LVAM	-25 – +45°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 13mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		NO

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

AVAILABLE SYSTEMS

AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

MATERIAL

Housing material – powder coated steel

Housing colours – RAL 9003, RAL 9006, RAL 9005, other on special order

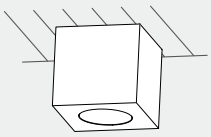
Lamp shade material – PMMA, glass on special order

LIGHT DISTRIBUTION CURVES AND DISTANCE TABLES

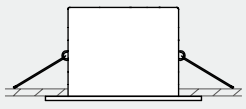
see page 80

MOUNTING TYPE

SU – directly to the ceiling

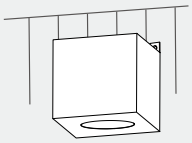


FL – recessed

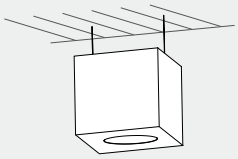


MOUNTING KITS

W131 – side to the wall



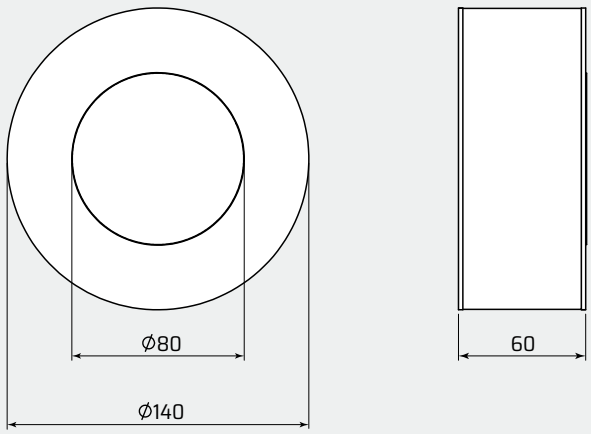
C102 – suspended



OWA ALSU LED

OWA ALSU is a high efficiency surface mounted LED luminaire designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

A powder coated extruded aluminum housing and an optional glass diffuser allow to use OWA ALSU in difficult atmosphere conditions.



- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility to connect to the central management system, central power supply or group power supply
- Lighting of escape routes, open spaces and fire point
- Small housing made of aluminum
- Does not emit silicone and is resistant to unusual conditions in the building
- Wide range of optics

IP65

CNBOP-PIB 2458/2015

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	8–32V DC
Protection class	**AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP65
Light source		LED Modules [1]
Light colour temperature		5700K
Light source supply power		3W
Minimum luminous flux	**RO**	321lm
	RP	325lm
	AR	282lm
	SD	321lm

Light source lifespan		> 50 000h
Battery type / voltage	**Ni-MH**	4,8V
Battery capacity		1,6; 2,1; 4,0Ah
Battery recharging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature (3W)	**AT, CT**	+5 – +40˚C; **TE:** [2] -20 – +40˚C [3]
	CB, CBAM	-10 – +40˚C; **TE:** [2] -25 – +45˚C
	LVAM	-25 – +50˚C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 8mm
Communication cable diameter		≤ 6mm
Through wiring		NO
Suitable for surface wiring		NO

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range; [3] Available only for 1 hour of emergency operation time

MATERIAL

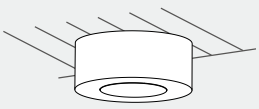
Housing material – powder coated aluminum

Housing colours – RAL 9003, RAL 9006, RAL 9005, other on special order

Lamp shade material – PMMA

MOUNTING TYPE

Directly to the ceiling

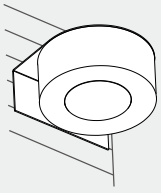


AVAILABLE SYSTEMS

AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

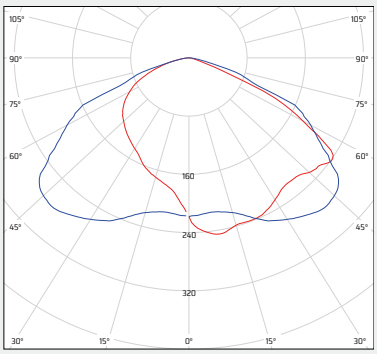
MOUNTING KITS

W135 – side to the wall

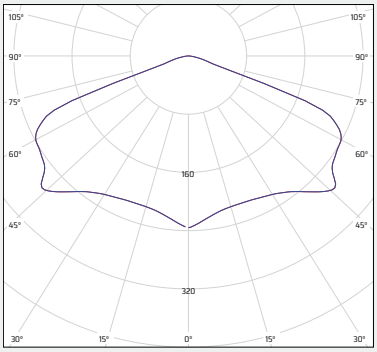


LIGHT DISTRIBUTION CURVES

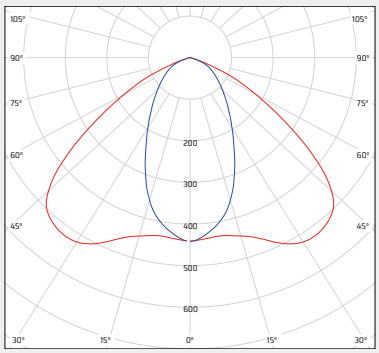
SIDE (SD)



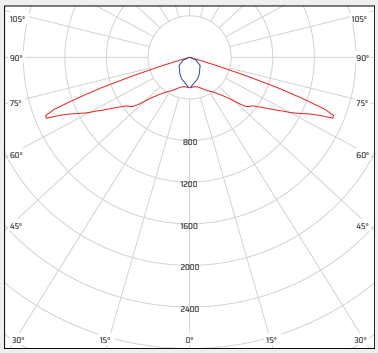
AREA (AR)



ROAD (RO)



ROAD PLUS (RP)



cd/klm
C0 - C180
C90 - C270

DISTANCE TABLES

Table for open area lighting

AREA; 3W; 5700K

↕ [m]	↔0	0↔0
2	4,2	8,9
2,5	4,8	10,8
3	5,1	12,3
3,5	5,3	13,4
4	5,4	14,1
4,5	5,5	14,7
5	5,5	15,0
5,5	5,6	15,2
6	5,7	15,3
6,5	5,4	15,5
7	5,0	15,5
7,5	4,5	15,7
8	3,9	15,8
8,5	3,3	15,6
9	2,6	15,2
9,5	1,7	14,7
10	0,8	13,7

Tables for emergency routes

ROAD PLUS; 3W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	6,2	13,0	10,2	7,5	3,1
2,5	7,5	15,8	12,0	8,3	3,4
3	8,6	18,4	13,7	8,9	3,6
3,5	9,6	20,9	15,2	9,6	3,6
4	10,5	23,2	16,5	9,9	3,5
4,5	11,0	25,3	17,6	10,1	3,4
5	10,6	27,2	18,6	10,0	3,3
5,5	10,2	28,3	19,4	9,9	3,2
6	9,4	29,1	19,1	9,8	3,0
6,5	8,7	29,5	18,6	9,6	2,7
7	8,4	29,8	17,8	9,4	2,3
7,5	5,3	29,2	17,1	9,2	1,7
8	3,6	28,0	15,4	8,8	1,0
8,5	0,5	26,5	13,4	8,3	0,3

SIDE; 3W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	3,9	8,6	9,2	9,4	4,0
2,5	4,3	9,6	10,4	10,7	4,3
3	4,7	10,4	11,3	11,5	4,6
3,5	4,8	11,1	12,1	12,1	4,8
4	4,7	11,6	12,8	12,7	5,0
4,5	4,4	11,6	13,3	13,2	5,0
5	4,2	11,4	13,4	13,6	4,9
5,5	3,9	11,1	13,5	14,1	4,7
6	3,6	10,8	13,3	14,2	4,3
6,5	3,2	10,3	13,2	14,1	3,6
7	2,6	9,9	12,8	13,9	1,9

ROAD; 3W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	3,8	8,8	7,8	6,8	2,8
2,5	4,3	10,0	8,7	7,4	3,0
3	4,8	11,1	9,5	7,9	3,1
3,5	5,2	12,1	10,2	8,3	3,2
4	5,6	13,1	10,9	8,6	3,3
4,5	5,9	13,9	11,4	8,9	3,3
5	6,1	14,7	11,9	9,1	3,4
5,5	6,4	15,4	12,4	9,3	3,4
6	6,5	16,1	12,8	9,4	3,3
6,5	6,6	16,7	13,1	9,4	3,3
7	6,5	17,2	13,4	9,5	3,2
7,5	6,4	17,7	13,6	9,5	3,1
8	6,2	18,1	13,7	9,4	2,9
8,5	5,9	18,3	13,8	9,3	2,7
9	5,4	18,5	13,7	9,2	2,5
9,5	4,4	18,5	13,5	9,1	2,1
10	2,5	18,4	13,2	8,9	1,4

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

↕ – luminaire mounting height; **‡↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔⟲** – distance between the luminaires placed longer angle of light perpendicular to each other; **⟲↔⟲** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔⟲** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

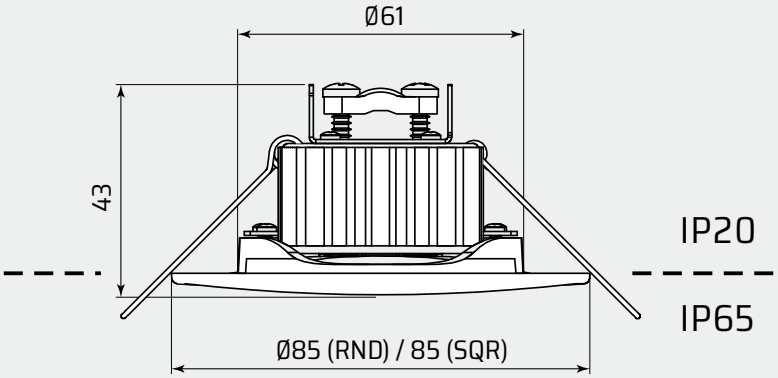
OWA FL LED

OWA FL LED is a high efficiency recessed LED luminaire designed for emergency lighting installed inside buildings. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

Round (RND) and square (SQR) light sources available.

AREA/AREA PLUS

ROAD PLUS



- Deep discharge battery protection
- Non-maintained, switched maintained or night operation mode
- Possibility to connect to the central management system, central power supply or group power supply
- Lighting of escape routes, open spaces and fire point
- Small light source housing made of plastic
- Three variants of the luminaire power (1W/2W/3W)
- Wide range of optics

IP20 IP65

2443/2015

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	8–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP65 / IP20
Light source		LED Module [1]
Light colour temperature		5700K
Colour rendering index		70
Light source supply power		1W, 2W, 3W

Minimum luminous flux (1W/2W/3W)	**RP**	145/238/347 lm
	AP	142/233/340 lm
	AR	148/243/355 lm
Light source lifespan		> 50 000h
Battery type / voltage	**Ni-Cd; Ni-MH**	4,8V
Battery capacity		1,0; 1,5; 1,6; 2,1; 2,5; 4,0Ah
Battery recharging time		< 24h
Emergency operation time (taw)		1h, 3h
Ambient temperature	**ST, AT, CT**	+5 – +45°C; **TE:** [2] -20 – +45°C
	CB, CBAM	-10 – +55°C; **TE:** [2] -25 – +55°C
	LVAM	-25 – +55°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 8mm
Through wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

AVAILABLE SYSTEMS

ST, AT, **CT**, **CB**, **CBAM**, **LVAM** – see page 6

MATERIAL

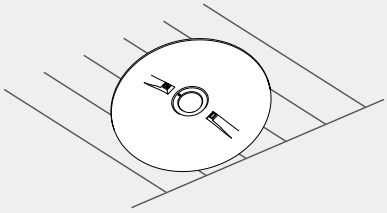
Housing material – PC/ABS

Housing colours – RAL 9016, RAL 7042, RAL 9005

Power supply material – steel

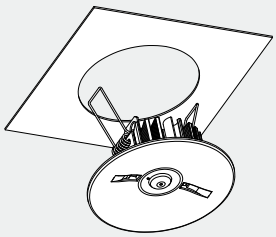
MOUNTING TYPE

Recessed



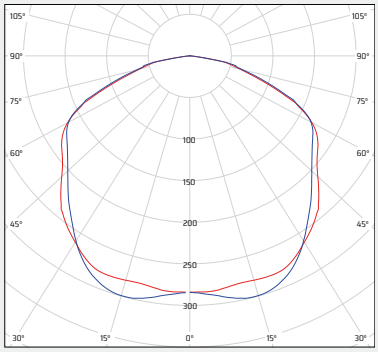
MOUNTING KIT

C125 – is used to mount luminaires in a raster ceiling

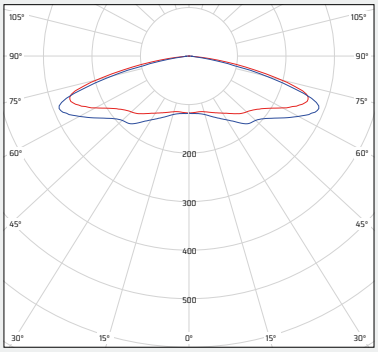


LIGHT DISTRIBUTION CURVES

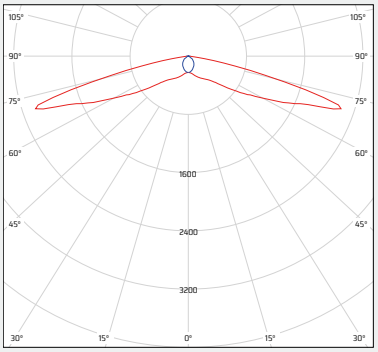
AREA (AR)



AREA PLUS (AP)



ROAD PLUS (RP)



cd/klm — C0 - C180 — C90 - C270

DISTANCE TABLES

Tables for open area lighting

AREA; 1W; 5700K

↕ [m]	↔0	0↔0
2	3,3	8,0
2,5	3,5	8,8
3	3,7	9,4
3,5	3,7	9,9
4	3,8	10,2
4,5	3,8	10,4
5	3,8	10,5
5,5	3,7	10,6
6	3,6	10,7
6,5	3,4	10,7
7	3,1	10,6
7,5	2,8	10,5
8	1,7	10,4

AREA; 2W; 5700K

↕ [m]	↔0	0↔0
2	3,8	9,0
2,5	4,2	10,1
3	4,4	11,0
3,5	4,6	11,7
4	4,7	12,2
4,5	4,8	12,6
5	4,8	12,9
5,5	4,9	13,2
6	4,9	13,4
6,5	4,8	13,5
7	4,8	13,6
7,5	4,7	13,6
8	4,5	13,7
8,5	4,3	13,7
9	3,9	13,6
9,5	3,7	13,5
10	2,9	13,4

AREA; 3W; 5700K

↕ [m]	↔0	0↔0
2	4,2	9,9
2,5	4,7	11,1
3	5,0	12,2
3,5	5,3	13,1
4	5,5	13,8
4,5	5,6	14,4
5	5,7	14,9
5,5	5,8	15,3
6	5,8	15,6
6,5	5,9	15,9
7	5,9	16,1
7,5	5,8	16,2
8	5,8	16,3
8,5	5,7	16,4
9	5,6	16,5
9,5	5,5	16,5
10	5,3	16,5
10,5	4,7	16,5
11	4,6	16,4
11,5	4,4	16,3
12	3,7	16,2

AREA PLUS; 1W; 5700K

↕ [m]	‡↔0	0↔0
2	3,8	9,9
2,5	3,7	10,5
3	3,5	10,7
3,5	3,3	10,5
4	3,1	10,1
4,5	2,3	9,7
5	0,6	9,3

AREA PLUS; 2W; 5700K

↕ [m]	‡↔0	0↔0
2	4,6	11,3
2,5	4,8	12,5
3	4,8	13,2
3,5	4,7	13,6
4	4,4	13,6
4,5	4,2	13,4
5	4,0	13,1
5,5	3,4	12,7
6	2,4	12,2

AREA PLUS; 3W; 5700K

↕ [m]	‡↔0	0↔0
2	5,2	12,4
2,5	5,6	13,9
3	5,8	15,1
3,5	5,8	15,8
4	5,7	16,3
4,5	5,5	16,5
5	5,3	16,4
5,5	5,1	16,2
6	4,9	15,8
6,5	4,3	15,4
7	3,4	14,9
7,5	2,0	14,5

Tables for emergency routes

ROAD PLUS; 1W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,0	15,7	10,3	5,1	2,0
2,5	8,0	18,2	11,7	5,4	2,1
3	8,5	20,4	12,9	5,7	2,0
3,5	7,8	22,3	13,3	5,8	1,9
4	6,9	22,9	12,9	5,7	1,6
4,5	4,3	23,1	11,5	5,6	1,2
5	3,0	21,7	9,3	5,2	0,1

ROAD PLUS; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,6	17,1	11,2	5,8	2,4
2,5	8,8	19,8	12,9	6,5	2,5
3	9,8	22,3	14,5	6,8	2,6
3,5	10,7	24,7	15,7	7,1	2,6
4	10,7	26,8	16,8	7,3	2,6
4,5	10,0	28,7	17,0	7,4	2,4
5	9,1	29,2	16,6	7,4	2,1
5,5	7,9	29,7	15,9	7,2	1,8
6	4,8	28,7	13,5	7,0	1,2

ROAD PLUS; 3W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	8,1	18,2	12,0	6,0	2,7
2,5	9,4	21,1	13,8	7,0	2,9
3	10,6	23,8	15,5	7,8	3,0
3,5	11,6	26,3	17,2	8,1	3,2
4	12,5	28,7	18,5	8,4	3,2
4,5	13,2	31,0	19,6	8,7	3,1
5	12,4	33,0	20,7	8,9	3,0
5,5	12,0	34,8	20,5	9,0	2,8
6	11,1	35,1	20,1	8,9	2,6
6,5	9,9	35,7	19,5	8,8	2,2
7	6,4	35,5	17,7	8,6	1,8
7,5	5,3	34,2	15,0	8,2	1,0

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

↕ – luminaire mounting height; **‡↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔◇** – distance between the luminaires placed longer angle of light perpendicular to each other; **◇↔◇** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔◇** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

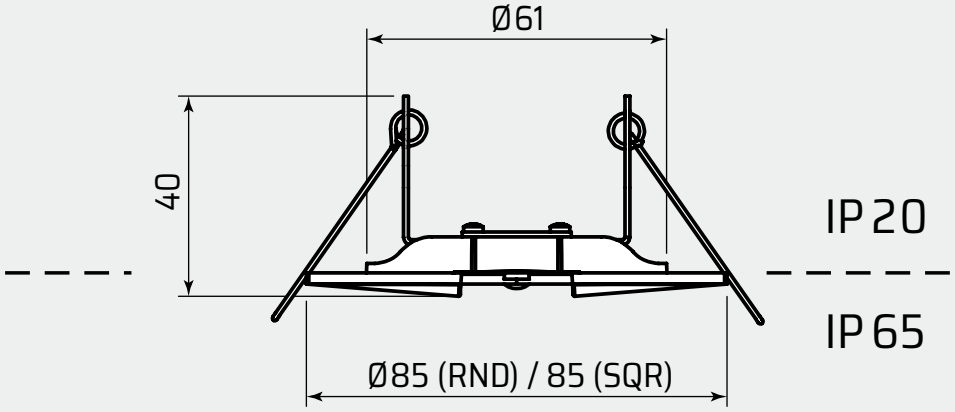
OWA ALFA LED

OWA ALFA LED is a recessed luminaire with highly efficient LED, designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, working places and public buildings rooms, etc.

Round (RND) and square (SQR) light sources available.

AREA/AREA PLUS

ROAD PLUS



- Deep discharge battery protection
- Lighting of escape routes, open spaces and fire point
- Small light source housing made of plastic
- Wide range of optics

IP20 IP65

CNBOP-PIB 2889/2015

TECHNICAL DATA

Supply voltage	**AT**	230V AC 50/60Hz
Protection class		I
Ingress protection light source/ emergency module		IP65 / IP20
Light source		LED Module [1]
Light colour temperature		5700K
Colour rendering index		70
Light source supply power		3W
Minimum luminous flux	**RP**	238 lm
	AP	233 lm
	AR	265 lm

Light source lifespan	> 50 000h
Battery type / voltage	Ni-Cd / 4.8V
Battery capacity	1.0Ah; 1.5Ah; 2.5Ah
Battery charging time	< 24h
Emergency operation time	1h, 3h
Ambient temperature	+5 – +35°C;
Supply cable cross-section area	0.5 – 2.5mm²
Supply cable diameter	≤ 8mm
Suitable for through wiring	YES

[1] Non-exchangeable, but serviceable light source

MATERIAL

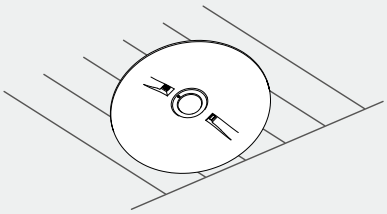
Housing material – PC/ABS

Housing colours – RAL 9016, RAL 7042, RAL 9005

Power supply material – steel

MOUNTING TYPE

Recessed

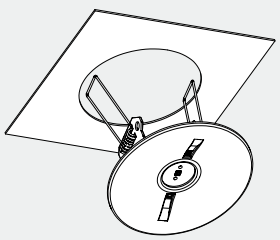


AVAILABLE SYSTEMS

AT – see page 6

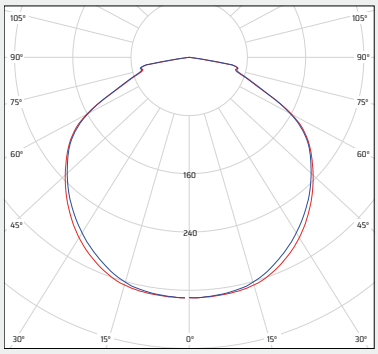
MOUNTING KIT

C125 – is used to mount luminaires in a raster ceiling

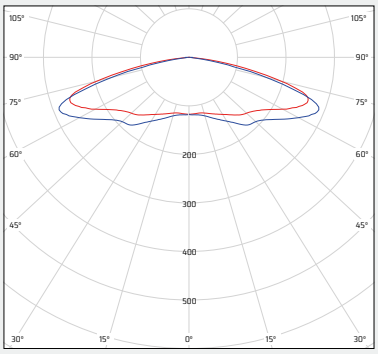


LIGHT DISTRIBUTION CURVES

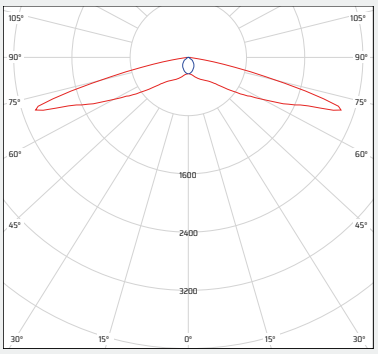
AREA (AR)



AREA PLUS (AP)



ROAD PLUS (RP)



cd/klm — C0 - C180 — C90 - C270

DISTANCE TABLES

Tables for open area lighting

AREA; 5700K

↕ [m]	↔0	0↔0
2	3,4	8,2
2.5	3,8	9,1
3	4,1	9,9
3.5	4,4	10,6
4	4,7	11,2
4.5	4,9	11,9
5	5	12,4
5.5	5,1	13
6	5,2	13,4
6.5	5,1	13,8
7	5,1	14,1
7.5	5	14,3
8	4,8	14,4
8.5	4,7	14,5
9	4,4	14,5
9.5	4,1	14,4
10	3,7	14,3
10,5	3,2	14,1
11	2,5	13,8
11,5	1,3	13,5

AREA PLUS; 5700K

↕ [m]	↔0	0↔0
2	4.6	11.3
2.5	4.8	12.5
3	4.8	13.2
3.5	4.7	13.6
4	4.4	13.6
4.5	4.2	13.4
5	4.0	13.1
5.5	3.4	12.7
6	2.4	12.2

Table for escape routes

ROAD PLUS; 5700K

↕ [m]	↔◇	◇↔◇	◊↔◇	◊↔◊	↔◊
2	7.6	17.1	11.2	5.8	2.4
2.5	8.8	19.8	12.9	6.5	2.5
3	9.8	22.3	14.5	6.8	2.6
3.5	10.7	24.7	15.7	7.1	2.6
4	10.7	26.8	16.8	7.3	2.6
4.5	10.0	28.7	17.0	7.4	2.4
5	9.1	29.2	16.6	7.4	2.1
5.5	7.9	29.7	15.9	7.2	1.8
6	4.8	28.7	13.5	7.0	1.2

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

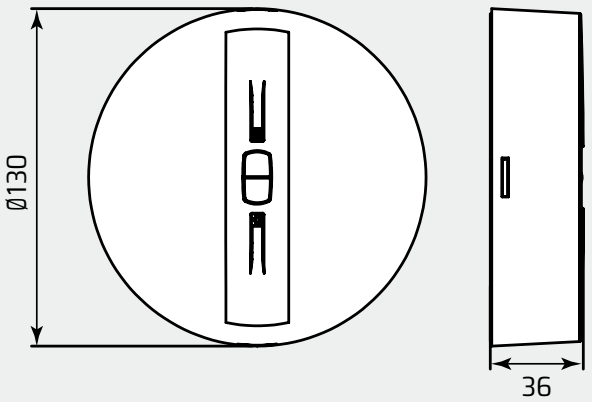
↕ - luminaire mounting height; **↔0** - distance between the wall and the luminaire; **0↔0** - distance between the luminaires; **↔◊** - distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** - distance between the luminaires placed longer angle of light parallel to each other; **◊↔◇** - distance between the luminaires placed longer angle of light perpendicular to each other; **◇↔◇** - distance between the luminaires placed shorter angle of light parallel to each other; **↔◇** - distance between the wall and the luminaire placed shorter angle of light parallel to the wall

OWA SU LED

OWA SU LED is a mean power and high efficiency surface mounted LED luminaire designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, workplaces, etc.

AREA/AREA PLUS

ROAD PLUS



- Deep discharge battery protection
- Maintained/non-maintained or switched maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Small light source housing made of plastic
- Three light source supply power (1W/2W/3W)
- A lot of mounting types
- Wide range of optics

CE IP65

CNBOP-PIB 2443/2015

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB, CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	15–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP65
Mechanical resistance	**AP, AR**	IK07
	RP	IK09
Light source		LED Module [1]
Light colour temperature		5700K
Colour rendering index		70
Light source supply power		1W, 2W, 3W
Minimum luminous flux (1W/2W/3W)	**RP**	142/234/347 lm
	AP	139/229/340 lm
	AR	145/239/355 lm
Minimum luminous flux (3W – 0420, 0421 variant)	**RP**	395 lm
	AP	438 lm
	AR	426 lm
Light source lifespan		> 50 000h

Battery type / voltage	**LiFePO4/C**	6,4V
Battery capacity / charging time	**0,6Ah**	< 10h
	1,5Ah	< 14h
	2,0Ah	< 16h
Emergency operation time		1h, 2h, 3h
Ambient temperature	**ST, AT, CT**	**1W:** +5 – +45°C; **2W:** +5 – +40°C; **3W:** +5 – +35°C
Ambient temperature (1W, 2W)	**CB, CBAM**	-10 – +45°C; **TE:** [2] -25 – +55°C
	LVAM	-25 – +55°C
Ambient temperature (3W)	**CB, CBAM**	-10 – +40°C; **TE:** [2] -25 – +45°C
	LVAM	-25 – +45°C
Supply cable cross-section area		0,5 – 2,5mm²
Supply cable diameter		≤ 16mm
Communication cable diameter		≤ 7mm
Through wiring		YES
Suitable for surface wiring		NO

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

MATERIAL

Housing material – PC/ABS mix

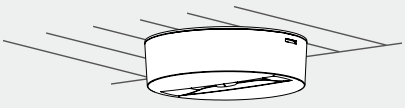
Housing colours – RAL 9016, RAL 7042, RAL 9005

AVAILABLE SYSTEMS

ST, AT, CT, CB, CBAM, LVAM – see page 6

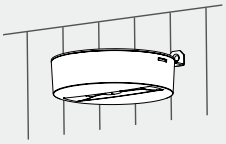
MOUNTING TYPE

Directly to the ceiling

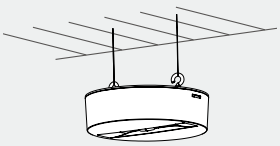


MOUNTING KITS

W170 – side to the wall

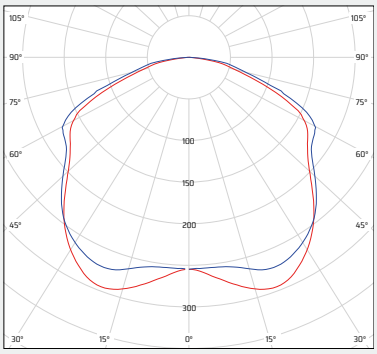


C116 – suspended (hooks or pins), e.g. for cable trays or with pins to the ceiling with surface-mounted wiring

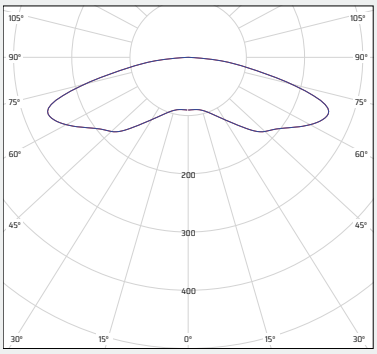


LIGHT DISTRIBUTION CURVES

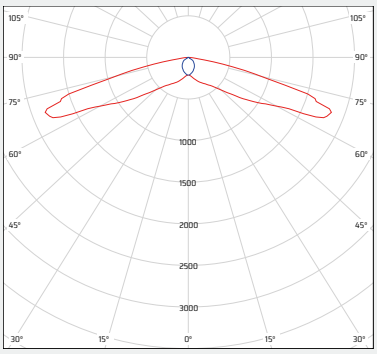
AREA (AR)



AREA PLUS (AP)



ROAD PLUS (RP)



cd/klm — C0 - C180 — C90 - C270

DISTANCE TABLES

Tables for emergency routes

ROAD PLUS; 1W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	6,6	14,8	10,0	5,1	2,0
2,5	7,3	17,1	11,3	5,4	2,0
3	7,9	19,2	12,2	5,6	1,9
3,5	8,1	20,4	12,9	5,6	1,7
4	6,8	21,9	12,9	5,5	1,4
4,5	5,4	21,8	11,9	5,2	0,9

ROAD PLUS; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,2	16,3	10,6	5,8	2,4
2,5	8,3	18,6	12,5	6,5	2,5
3	9,1	21,0	13,9	6,8	2,6
3,5	9,8	23,3	15,1	7,0	2,5
4	10,3	25,1	15,8	7,2	2,4
4,5	10,5	26,2	16,6	7,2	2,2
5	9,0	27,8	17,0	7,1	1,9
5,5	8,1	28,6	15,7	6,9	1,5
6	5,4	28,0	14,9	6,5	0,7

ROAD PLUS; 3W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,7	17,5	11,3	6,2	2,7
2,5	8,9	20,1	13,2	7,2	2,9
3	10,0	22,5	15,1	7,8	3,0
3,5	10,9	24,9	16,5	8,2	3,1
4	11,5	27,2	17,8	8,4	3,1
4,5	12,2	29,4	18,7	8,6	3,0
5	12,6	30,9	19,3	8,8	2,9
5,5	12,7	31,9	20,2	8,7	2,7
6	11,1	33,5	20,6	8,7	2,4
6,5	10,3	34,7	19,5	8,5	2,0
7	8,7	34,1	18,6	8,2	1,4
7,5	5,8	34,1	17,3	7,7	0,4

ROAD PLUS; 0420/1 variant; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	7,5	16,4	11,1	6,3	2,8
2,5	8,8	19,4	13,2	7,3	3,0
3	10,1	22,2	15,1	8,0	3,1
3,5	11,2	24,8	16,6	8,5	3,1
4	12,1	27,2	18,0	8,7	3,1
4,5	12,9	29,6	19,2	8,8	3,0
5	13,2	31,7	20,3	8,8	2,9
5,5	13,2	33,7	21,2	8,7	2,7
6	12,6	35,3	21,5	8,7	2,5
6,5	12,1	36,2	21,2	8,5	2,1
7	11,6	36,7	20,6	8,2	1,6
7,5	10,4	37,1	20,1	7,8	0,6

Tables for open area lighting

AREA; 1W; 5700K

↕ [m]	‡↔0	0↔0
2	3,2	7,8
2,5	3,4	8,6
3	3,6	9,2
3,5	3,7	9,7
4	3,8	10,0
4,5	3,8	10,3
5	3,8	10,4
5,5	3,7	10,6
6	3,6	10,6
6,5	3,4	10,7
7	3,0	10,6
7,5	2,0	10,5

AREA; 2W; 5700K

↕ [m]	‡↔0	0↔0
2	3,7	8,9
2,5	4,1	9,9
3	4,3	10,7
3,5	4,5	11,4
4	4,7	12,0
4,5	4,8	12,4
5	4,8	12,8
5,5	4,9	13,0
6	4,9	13,3
6,5	4,8	13,4
7	4,8	13,5
7,5	4,7	13,6
8	4,5	13,7
8,5	4,2	13,7
9	3,8	13,6
9,5	3,0	13,5

AREA; 3W; 5700K

↕ [m]	‡↔0	0↔0
2	4,1	9,8
2,5	4,6	11,0
3	4,9	12,0
3,5	5,2	12,9
4	5,4	13,6
4,5	5,6	14,2
5	5,7	14,7
5,5	5,8	15,1
6	5,8	15,5
6,5	5,9	15,8
7	5,9	16,0
7,5	5,9	16,2
8	5,9	16,4
8,5	5,8	16,5
9	5,7	16,6
9,5	5,6	16,6
10	5,3	16,6
10,5	5,0	16,6
11	4,6	16,6
11,5	3,8	16,5

AREA; 0420/1 variant; 5700K

↕ [m]	‡↔0	0↔0
2	4,4	10,3
2,5	4,9	11,7
3	5,3	12,8
3,5	5,5	13,8
4	5,7	14,5
4,5	5,7	15,1
5	5,8	15,5
5,5	5,8	15,8
6	5,9	16,1
6,5	5,9	16,2
7	5,9	16,3
7,5	5,9	16,4
8	5,8	16,5
8,5	5,7	16,6
9	5,7	16,6
9,5	5,5	16,6
10	5,4	16,6
10,5	5,2	16,5
11	4,9	16,4
11,5	4,5	16,3
12	3,8	16,1
12,5	2,6	16,0

AREA PLUS; 1W; 5700K

↕ [m]	‡↔0	0↔0
2	3,7	9,6
2,5	3,7	10,3
3	3,6	10,5
3,5	3,3	10,5
4	2,8	10,2

AREA PLUS; 2W; 5700K

↕ [m]	‡↔0	0↔0
2	4,5	11,1
2,5	4,8	12,2
3	4,8	13,0
3,5	4,7	13,4
4	4,5	13,5
4,5	4,2	13,5
5	3,8	13,2
5,5	1,4	12,8

AREA PLUS; 3W; 5700K

↕ [m]	‡↔0	0↔0
2	5,1	12,2
2,5	5,6	13,6
3	5,8	14,8
3,5	5,9	15,6
4	5,8	16,1
4,5	5,6	16,4
5	5,4	16,5
5,5	5,2	16,4
6	4,8	16,1
6,5	3,2	15,7

AREA PLUS; 0420/1 variant; 5700K

↕ [m]	‡↔0	0↔0
2	5,6	13,4
2,5	6,1	15,0
3	6,4	16,3
3,5	6,4	17,3
4	6,3	17,8
4,5	6,1	18,0
5	5,9	18,0
5,5	5,7	17,8
6	5,5	17,5
6,5	4,8	17,1
7	1,5	16,6

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

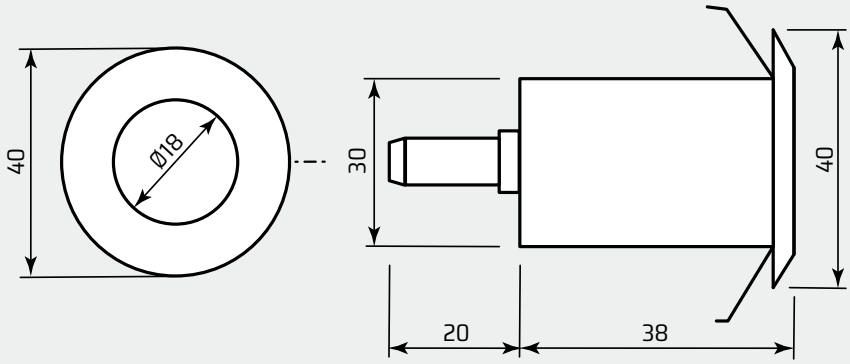
- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

↕ – luminaire mounting height; **‡↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔<>** – distance between the luminaires placed longer angle of light perpendicular to each other; **<>↔<>** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔<>** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

ATOM FL LED

ATOM FL is a high efficiency recessed LED luminaire designed for emergency lighting installed inside buildings. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.



- LED indicators signalling the luminaire state
- Deep discharge battery protection
- Maintained/non-maintained,switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- A lot of mounting types
- Housing is made of aluminum, lamp shade of PMMA
- Round (RND) and square (SQR) light sources available

IP20
IP65

CNBOP-PIB
2889/2017

TECHNICAL DATA

Supply voltage	**AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	8–32V DC
Protection class	**AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP20, IP65
Light source		LED Module [1]
Light colour temperature		5700K
Light source supply power		2W

Minimum luminous flux		185lm
Light source lifespan		> 50 000h
Battery type		Ni-Cd, Ni-MH
Battery capacity		1,0; 1,6; 2,5Ah
Battery recharging time		< 24h
Emergency operation time		1h, 2h, 3h
Ambient temperature	**AT, CT**	+5 – +35°C; **TE:** [2] -20 – +35°C
	CB, CBAM	-10 – +45°C; **TE:** [2] -25 – +50°C
	LVAM	-25 – +55°C
Supply cable cross-section area		0,5 – 1,5mm²

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

AVAILABLE SYSTEMS

AT, **CT**, **CB**, **CBAM, LVAM** – see page 6

MATERIAL

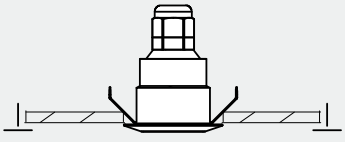
Light source housing material – aluminum

Light source housing colour – ○ RAL 9003,
○ brushed aluminum, other colours on special order

Lamp shade material – PMMA

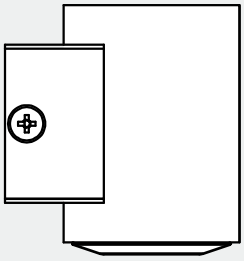
MOUNTING TYPE

Directly to the modular or suspended ceiling

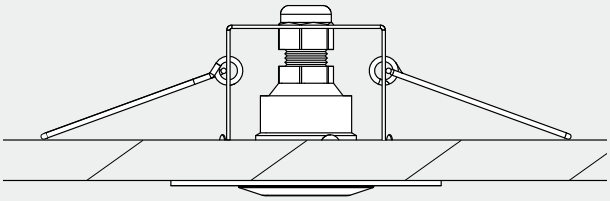


MOUNTING KITS

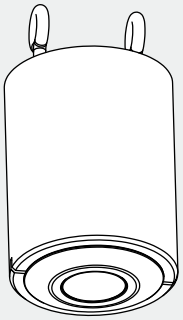
W130 – luminaires are mounted to the wall



C107 – luminaires are mounted to the non-modular suspended ceiling



C111 – luminaires are suspended using cords or chains (ordered separately)



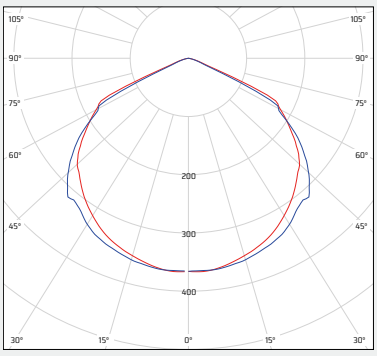
DISTANCE TABLE

Table for open area lighting

2W

↕ [m]	↔0	0↔0
2	3,5	7,4
2,5	4,0	8,9
3	4,2	10,1
3,5	4,5	11,1
4	4,7	11,7
4,5	4,9	12,2
5	5,0	12,7
5,5	5,1	13,2
6	5,0	13,6
6,5	5,0	13,9
7	4,9	14,1
7,5	4,8	14,2
8	4,6	14,2
8,5	4,3	14,1
9	4,0	14,1
9,5	3,6	13,9
10	3,1	13,7
10,5	2,5	13,4
11	1,8	13,1

LIGHT DISTRIBUTION CURVE



cd/klm — C0 - C180 — C90 - C270

The distance table for open area lighting is based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

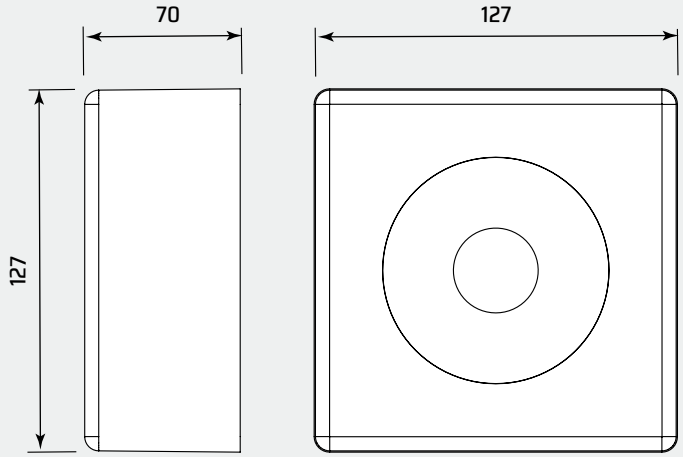
↕ – luminaire mounting height; **↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires

ORBIT SU LED

ORBIT SU is a high power and high efficiency surface mounted LED luminaire designed for emergency lighting. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

Using **ROAD PLUS** optics, the luminaire suspended at a height of 3m illuminates 11m escape route with the required intensity 1lx.

Easy mounting and battery exchange enable universal application of luminaire.



- Deep discharge battery protection
- Non-maintained operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Small light source housing made of plastic
- A lot of mounting types
- Wide range of optics

IP40
IP44
IP54

2225/2014

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	6–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP40, IP44, IP54 [1]
Light source		LED Module [2]
Light colour temperature		5700K

Light source supply power		3W
Minimum luminous flux	**RO, RP, SD**	220 lm
	AR	190 lm
Light source lifespan		> 50 000h
Battery type / voltage	**Ni-Cd; Ni-MH**	4,8V
Battery capacity		1,0; 1,6; 2,5Ah
Battery recharging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature		+5 – +40°C
Supply cable cross-section area		0,5 – 2,5mm^2

[1] Special variants for IP44 and IP54; [2] Non-exchangeable, but serviceable light source

AVAILABLE SYSTEMS

ST, AT, **CT**, **CB**, **CBAM, LVAM** – see page 6

MATERIAL

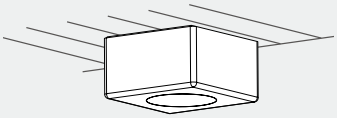
Housing material – polycarbonate

Housing colours – RAL 9003, RAL 9006, other on special order

Lamp shade material – PMMA

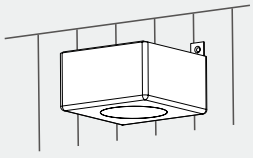
MOUNTING TYPE

Directly to the ceiling

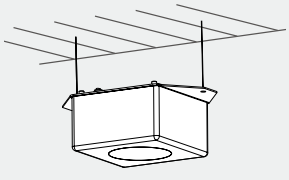


MOUNTING KITS

W132 – side to the wall

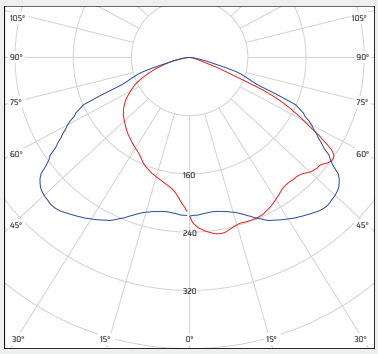


C108 – suspended

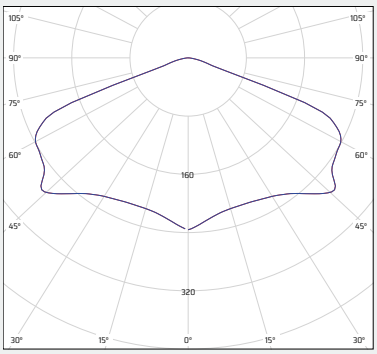


LIGHT DISTRIBUTION CURVES

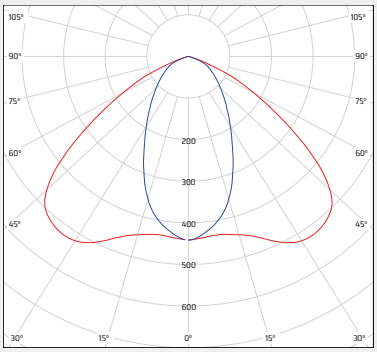
SIDE (SD)



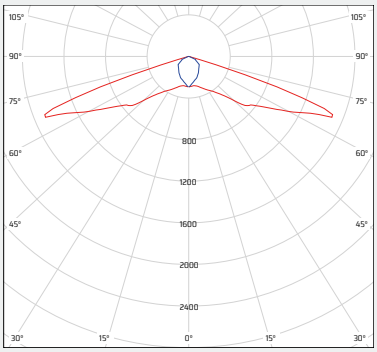
AREA (AR)



ROAD (RO)



ROAD PLUS (RP)



cd/klm
C0 - C180
C90 - C270

DISTANCE TABLES

Table for open area lighting

AREA; 2W; 5700K

↕ [m]	↔	↔
2	3,9	8,6
2,5	4,2	10,2
3	4,4	11,2
3,5	4,5	11,9
4	4,5	12,3
4,5	4,6	12,5
5	4,7	12,7
5,5	4,4	12,8
6	3,9	12,9
6,5	3,4	13,0
7	2,8	12,9
7,5	2,1	12,5
8	1,2	11,8

Tables for emergency routes

SIDE; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	3,5	7,8	8,5	8,7	3,5
2,5	3,9	8,6	9,4	9,5	3,8
3	4,0	9,3	10,2	10,1	4,0
3,5	3,8	9,6	10,8	10,7	4,2
4	3,5	9,5	11,0	11,1	4,1
4,5	3,2	9,2	11,1	11,6	3,9
5	2,9	8,8	11,0	11,7	3,5
5,5	2,5	8,4	10,8	11,6	2,7
6	1,7	7,9	10,4	11,3	0,5

ROAD PLUS; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	6,0	12,7	9,7	6,7	2,8
2,5	7,1	15,3	11,4	7,4	3,0
3	8,1	17,8	12,9	8,0	2,9
3,5	8,9	20,0	14,0	8,3	2,9
4	8,9	22,0	15,1	8,3	2,8
4,5	8,4	23,3	16,0	8,2	2,7
5	7,7	24,1	15,7	8,1	2,4
5,5	7,1	24,4	15,2	7,9	2,1
6	5,2	24,4	14,3	7,7	1,6
6,5	3,5	23,4	13,2	7,3	1,0
7	0,5	21,9	11,1	6,8	0,2

ROAD; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	3,5	8,1	7,1	6,0	2,4
2,5	4,0	9,3	7,9	6,5	2,6
3	4,4	10,2	8,6	6,9	2,7
3,5	4,7	11,1	9,2	7,2	2,8
4	5,0	12,0	9,7	7,5	2,8
4,5	5,2	12,7	10,2	7,6	2,8
5	5,4	13,4	10,6	7,8	2,8
5,5	5,4	14,0	10,9	7,8	2,7
6	5,4	14,5	11,1	7,8	2,6
6,5	5,2	14,9	11,3	7,8	2,5
7	4,9	15,1	11,4	7,7	2,3
7,5	4,4	15,3	11,3	7,6	2,0
8	3,1	15,3	11,1	7,5	1,5
8,5	1,0	15,1	10,7	7,3	0,6

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

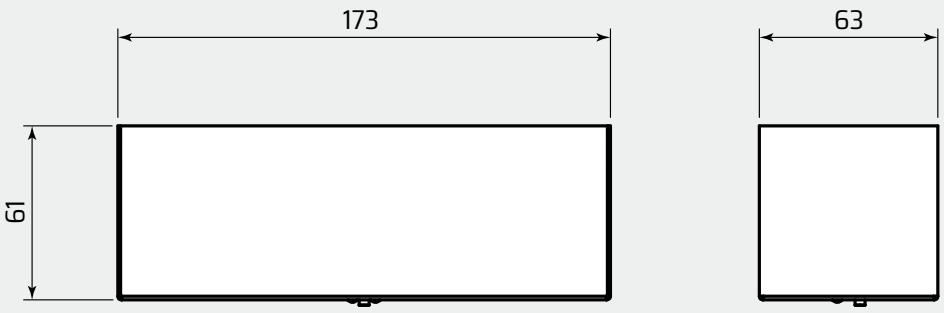
LEGEND:

↕ – luminaire mounting height; **‡↔O** – distance between the wall and the luminaire; **O↔O** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔◇** – distance between the luminaires placed longer angle of light perpendicular to each other; **◇↔◇** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔◇** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

CRYSTAL LED

CRYSTAL LED is a high efficiency surface mounted LED luminaire designed for emergency lighting installed inside buildings. Its main task is to illuminate escape routes, evacuation signs, rooms in public facilities, work places, etc.

CRYSTAL LED is compatible with all emergency lighting systems offered by HYBRYD.



- Deep discharge battery protection
- Maintained/non-maintained, switched maintained or night operation mode
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape routes, open spaces and fire points
- Housing is made of steel
- Three light source supply power (2W/4W/6W)
- A lot of mounting types
- Wide range of optics

IP40

CNBOP-PIB 2915/2017

TECHNICAL DATA

Supply voltage	**ST, AT, CT**	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275V DC
	CBAM	230V AC 50/60Hz 170–275V DC
	LVAM	10–32V DC
Protection class	**ST, AT, CT, CB, CBAM**	I
	LVAM	III
Ingress protection		IP40
Light source		LED modules [1]
Light colour temperature		5700K
Light source supply power		2W, 4W, 6W
Minimum luminous flux (2W/4W/6W)	**AR**	220 lm / 417 lm / 642 lm
	AP	175 lm / 331 lm / 508 lm
	RO	177 lm / 336 lm / 515 lm
	RP	127 lm / 239 lm / 368 lm

Light source lifespan		> 50 000h
Battery type / voltage		Ni-Cd, Ni-MH / 4,8V
Battery capacity		1,0; 1,6; 2,1; 4,0Ah
Battery charging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature	**ST, AT, CT**	+5 – +35°C; **TE:** [2] -20 – +35°C
	CB, CBAM	-10 – +45°C; **TE:** [2] -25 – +50°C
	LVAM	-25 – +65°C
Supply cable cross-section area		0,5 – 2,5mm^2
Supply cable diameter		≤ 13mm
Communication cable diameter	**CT**	≤ 7mm
Suitable for through wiring		YES

[1] Non-exchangeable, but serviceable light source; [2] TE – extended temperature range

AVAILABLE SYSTEMS

ST, AT, **CT**, **CB**, **CBAM, LVAM** – see page 6

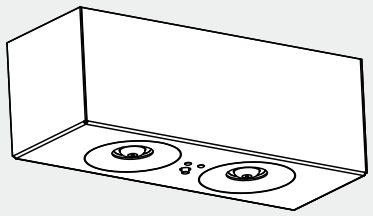
MATERIAL

Housing material – steel

Housing colour – ❍ RAL 9003, other colours on special order

MOUNTING TYPE

Directly to the ceiling



MOUNTING KITS

C118 – recessed

C119 – suspended

W138 – back to the wall

W160 – to wall or ceiling by the shorter side with angle adjustment

W161 – to wall or ceiling by the longer side with angle adjustment

AVAILABLE OPTICS

AREA – (AR) symmetrical light distribution in all directions, recommended for use in places of considerable height or to illuminate fire points

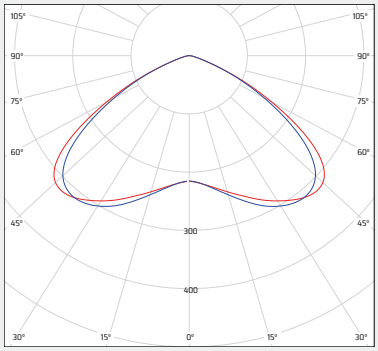
AREA PLUS – (AP) symmetrical light distribution in all directions, ensuring adequate illumination on a large area

ROAD – (RO) light distribution mainly along the escape route, recommended for use in high corridors

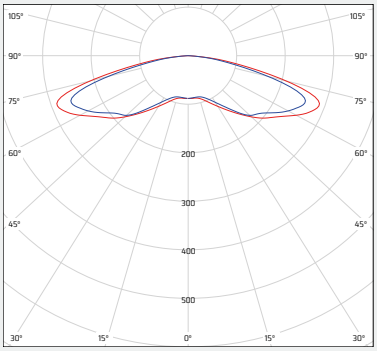
ROAD PLUS – (RP) light distribution mainly along the escape route with a long range, for small heights

LIGHT DISTRIBUTION CURVES

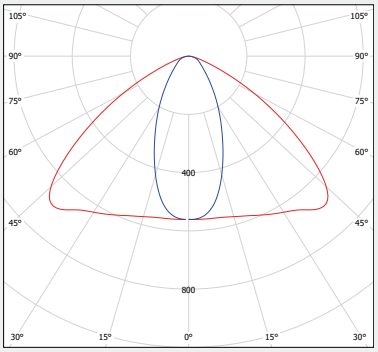
AREA (AR)



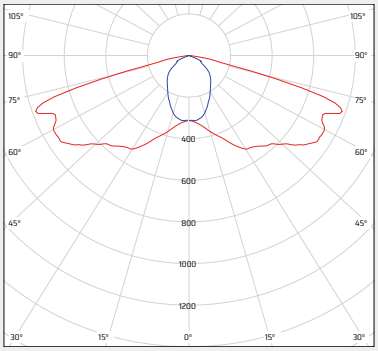
AREA PLUS (AP)



ROAD (RO)



ROAD PLUS (RP)



cd/klm

C0 - C180

C90 - C270

DISTANCE TABLES

Tables for open area lighting

AREA PLUS; 2W; 5700K

↕ [m]	↔0	0↔0
2	4,1	10,3
2,5	4,2	11,2
3	4,1	11,7
3,5	3,9	11,8
4	3,7	11,6
4,5	2,4	11,3

AREA PLUS; 4W; 5700K

↕ [m]	↔0	0↔0
2	5,1	12,0
2,5	5,5	13,5
3	5,7	14,7
3,5	5,7	15,5
4	5,7	16,0
4,5	5,5	16,2
5	5,3	16,2
5,5	5,1	16,0
6	4,4	15,7
6,5	1,3	15,4

AREA PLUS; 6W; 5700K

↕ [m]	↔0	0↔0
2	5,7	13,3
2,5	6,3	15,0
3	6,7	16,5
3,5	7,0	17,7
4	7,1	18,7
4,5	7,1	19,4
5	7,0	19,8
5,5	6,8	20,0
6	6,7	20,0
6,5	6,5	19,9
7	6,2	19,7
7,5	5,2	19,4
8	1,8	19,1

AREA; 2W; 5700K

↕ [m]	‡↔0	0↔0
2	3,4	7,6
2,5	3,8	8,8
3	4,2	9,8
3,5	4,5	10,8
4	4,8	11,5
4,5	5,0	12,2
5	5,1	12,9
5,5	5,2	13,4
6	5,2	13,8
6,5	5,1	14,1
7	4,9	14,3
7,5	4,7	14,5
8	4,2	14,6
8,5	3,2	14,6

AREA; 4W; 5700K

↕ [m]	‡↔0	0↔0
2	3,8	8,4
2,5	4,4	9,8
3	4,9	11,1
3,5	5,3	12,3
4	5,7	13,3
4,5	6,1	14,3
5	6,3	15,1
5,5	6,6	15,9
6	6,8	16,6
6,5	6,9	17,2
7	7,0	17,8
7,5	7,1	18,3
8	7,1	18,7
8,5	7,1	19,1
9	7,0	19,4
9,5	6,8	19,7
10	6,6	19,9
10,5	6,3	20,0
11	5,8	20,1
11,5	5,1	20,1

AREA; 6W; 5700K

↕ [m]	‡↔0	0↔0
2	3,8	8,5
2,5	4,7	10,5
3	5,3	12,0
3,5	5,8	13,3
4	6,3	14,5
4,5	6,7	15,6
5	7,1	16,6
5,5	7,4	17,5
6	7,7	18,4
6,5	8,0	19,2
7	8,2	19,9
7,5	8,4	20,6
8	8,6	21,3
8,5	8,7	21,9
9	8,8	22,4
9,5	8,8	22,9
10	8,8	23,3
10,5	8,8	23,7
11	8,7	24,0
11,5	8,6	24,3
12	8,4	24,5
12,5	8,1	24,7
13	7,8	24,8
13,5	7,3	24,9
14	6,8	24,9
14,5	5,4	24,8

Tables for emergency routes

ROAD PLUS; 2W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	4,6	11,7	9,0	5,6	2,2
2,5	4,9	13,6	9,5	6,1	2,3
3	5,2	13,7	9,8	6,3	2,2
3,5	5,3	14,1	10,2	6,4	2,1
4	5,1	14,6	10,3	6,3	2,0
4,5	4,6	14,8	10,3	6,1	1,7
5	4,1	14,9	9,9	5,9	1,4

ROAD PLUS; 4W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	6,3	14,3	11,3	7,3	3,0
2,5	7,6	17,4	12,9	8,0	3,4
3	8,1	19,7	14,1	8,8	3,6
3,5	8,1	21,4	15,0	9,5	3,7
4	8,3	22,5	15,3	10,0	3,8
4,5	8,6	22,9	15,9	10,3	3,8
5	8,7	22,8	16,4	10,5	3,7
5,5	8,8	23,2	16,7	10,6	3,6
6	8,8	23,8	17,0	10,6	3,5
6,5	8,6	24,3	17,2	10,5	3,3
7	8,2	24,6	17,2	10,4	3,1
7,5	7,7	24,7	17,2	10,2	2,9
8	7,2	24,8	16,9	10,0	2,5
8,5	6,7	24,8	16,4	9,8	2,1
9	6,2	24,4	15,8	9,5	1,3

ROAD PLUS; 6W; 5700K

↕ [m]	‡↔◇	◇↔◇	◊↔◇	◊↔◊	‡↔◊
2	6,8	15,2	12,2	8,5	3,4
2,5	8,3	18,6	14,0	9,1	3,7
3	9,3	21,3	15,6	9,7	4,1
3,5	9,8	23,5	16,9	10,5	4,4
4	10,0	25,4	17,9	11,2	4,5
4,5	10,0	26,8	18,6	11,9	4,6
5	10,3	27,9	18,9	12,3	4,7
5,5	10,5	28,3	19,5	12,7	4,7
6	10,7	28,0	20,1	12,9	4,6
6,5	10,8	28,4	20,4	13,1	4,5
7	10,9	28,9	20,8	13,1	4,4
7,5	10,8	29,4	21,1	13,2	4,3
8	10,6	30,0	21,2	13,1	4,1
8,5	10,3	30,3	21,3	12,9	3,9
9	9,8	30,5	21,3	12,7	3,7
9,5	9,3	30,6	21,2	12,6	3,4
10	8,9	30,7	20,9	12,3	3,1
10,5	8,4	30,7	20,4	12,1	2,7
11	7,8	30,3	19,8	11,8	2,0

ROAD; 2W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	3,6	8,2	6,6	5,1	2,1
2,5	4,1	9,4	7,5	5,5	2,2
3	4,5	10,4	8,2	5,8	2,3
3,5	4,8	11,4	8,8	6,2	2,4
4	5,1	12,2	9,3	6,4	2,5
4,5	5,4	13,0	9,8	6,6	2,5
5	5,6	13,7	10,2	6,8	2,5
5,5	5,7	14,3	10,6	6,9	2,4
6	5,7	14,8	10,8	7,0	2,4
6,5	5,4	15,3	11,1	7,0	2,3
7	4,8	15,6	11,2	7,0	2,1
7,5	4,2	15,9	11,1	6,9	1,9
8	3,2	15,9	10,5	6,8	1,6
8,5	1,6	15,5	9,9	6,6	1,0

ROAD; 4W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	4,1	9,3	7,9	6,4	2,6
2,5	4,7	10,7	8,9	6,9	2,8
3	5,3	12,0	9,8	7,4	3,0
3,5	5,8	13,2	10,6	7,8	3,1
4	6,2	14,3	11,3	8,2	3,3
4,5	6,6	15,3	12,0	8,5	3,4
5	6,9	16,3	12,6	8,8	3,5
5,5	7,2	17,1	13,1	9,1	3,5
6	7,5	18,0	13,6	9,3	3,6
6,5	7,7	18,7	14,1	9,6	3,6
7	7,9	19,4	14,5	9,7	3,6
7,5	8,1	20,0	14,9	9,9	3,5
8	8,2	20,6	15,2	10,0	3,5
8,5	8,2	21,2	15,5	10,0	3,4
9	8,1	21,7	15,8	10,1	3,3
9,5	7,7	22,1	16,0	10,1	3,2
10	7,1	22,5	16,1	10,0	3,1
10,5	6,4	22,8	16,2	10,0	2,9
11	5,7	23,0	15,8	9,9	2,6
11,5	4,7	22,9	15,2	9,8	2,3
12	3,4	22,5	14,6	9,6	1,9

ROAD; 6W; 5700K

↕ [m]	‡↔⟲	⟲↔⟲	◊↔⟲	◊↔◊	‡↔◊
2	4,2	9,4	7,9	6,4	2,6
2,5	5,2	11,7	9,8	7,9	3,2
3	5,8	13,1	10,8	8,5	3,4
3,5	6,3	14,4	11,7	8,9	3,6
4	6,8	15,7	12,6	9,4	3,8
4,5	7,3	16,9	13,4	9,8	3,9
5	7,7	18,0	14,1	10,1	4,0
5,5	8,1	19,0	14,7	10,5	4,1
6	8,5	19,9	15,4	10,8	4,2
6,5	8,8	20,8	15,9	11,1	4,3
7	9,1	21,7	16,5	11,3	4,4
7,5	9,4	22,5	17,0	11,5	4,4
8	9,6	23,2	17,4	11,7	4,4
8,5	9,8	23,9	17,9	11,9	4,4
9	10,0	24,6	18,3	12,1	4,4
9,5	10,1	25,2	18,6	12,2	4,3
10	10,2	25,8	19,0	12,3	4,3
10,5	10,2	26,3	19,3	12,4	4,2
11	10,1	26,8	19,5	12,4	4,1
11,5	9,8	27,3	19,7	12,4	4,0
12	9,2	27,7	19,9	12,4	3,9
12,5	8,6	28,1	20,0	12,4	3,7
13	8,0	28,4	20,0	12,3	3,5
13,5	7,3	28,6	19,7	12,2	3,3
14	6,4	28,7	19,1	12,1	3,0
14,5	5,3	28,3	18,5	12,0	2,7
15	3,8	27,9	17,9	11,8	2,1

The distance tables for flat escape routes are based on the following parameters:

- Maintenance factor: 0,77
- The minimum illuminance on centerline: 1,00 lx
- Minimum illuminance on half of escape route width: 0,50 lx
- Diversity on the centre line max.: 40:1
- Escape routes width: 2,00 m

The distance tables for open area lighting are based on the following parameters:

- Maintenance factor: 0,77
- Minimum illuminance at the floor level: 0,50 lx
- Diversity on the centre line max.: 40:1

LEGEND:

↕ – luminaire mounting height; **‡↔0** – distance between the wall and the luminaire; **0↔0** – distance between the luminaires; **‡↔◊** – distance between the wall and the luminaire placed longer angle of light parallel to the wall; **◊↔◊** – distance between the luminaires placed longer angle of light parallel to each other; **◊↔⟲** – distance between the luminaires placed longer angle of light perpendicular to each other; **⟲↔⟲** – distance between the luminaires placed shorter angle of light parallel to each other; **‡↔⟲** – distance between the wall and the luminaire placed shorter angle of light parallel to the wall

REFERENTIAL LIST

The company is proud of the implementation of many emergency lighting installations in various types of buildings throughout the country and abroad.

DOMESTIC IMPLEMENTATIONS

- Podium Park Kraków
- Fabios Maków Podhalański
- CH Galeria Północna
- Warsaw Underground – II Line
- Copernicus Science Centre
- Złota 44 Warszawa
- Hotel Europejski Warszawa
- Lidl Logistics Centre Kałuszyn
- OVO Hilton DoubleTree Wrocław
- Hilton DoubleTree Warszawa
- Puro Hotels Chain
- Hongbo Opole Manufacturing Plant
- 3M Opole Manufacturing Plant
- CH Libero Katowice
- EnerSys Bielsko-Biała
- Leroy Merlin Shopping Network
- IKEA Lublin
- CH Platan Zabrze
- Gates Legnica Manufacturing Plant
- General Motors Tychy/Gliwice
- Castorama Shopping Network
- Gazoport Świnoujście
- Bridgestone Stargard
- Poznań Voivodeship Hospital
- R7 Warehouses
- Novotel Poznań
- Metropolia Gdańsk Gallery
- District Court in Elbląg
- Morliny Ostróda Manufacturing Plant
- Prime Food Przechlewo
- Bosch Łódź
- 31 Base of Tactical Aviation Poznań Krzesiny
- Netto Shopping Network
- Good Food Poznań
- CH Galaxy Szczecin
- KGHM Polkowice / Głogów
- Raflatac Kobierzyce Manufacturing Plant
- Arena Gliwice

FOREIGN IMPLEMENTATIONS

- Rijeca Airport Croatia
- Palma de Mallorca Airport VIP Salon – Spain
- Oslofjord Convention Center – Norway
- Thyssen Krupps Factory – Romania
- Tokuda Hospital – Bulgaria
- Almarai – Saudi Arabia
- Tullamore Distillery – Ireland
- Wendre Mattress Factory – Estonia
- Aurora Clinic – Hungary
- Szekesfehervar Hospital – Hungary
- Public baths and SPA – Szechenyi, Hungary
- Budapest MOM Shopping Center – Hungary
- Shell Gas Station Network – Central and Eastern Europe
- Eger Hospital – Hungary
- Triple St-Prex Gyms – Switzerland
- La Meriden Hotel – Cyprus
- Minibea – Slovakia
- Nexen tire factory – Czech Republic
- Siemens Mohelnica – Czech Republic
- Pardubice Airport – Czech Republic
- Prologis Halls – Czech Republic
- OEZ Letohrad – Czech Republic
- Grand Hotel Karlove Vary – Czech Republic
- Klimeska Hora Sports Center – Czech Republic
- Hotel Nutrend Ołomuniec – Czech Republic
- Hotel Romana – Makarska, Croatia

Arena Gliwice

SAFETY SIGNS

According to EN ISO 7010:2020.

Set allows to compose your own sign **PIXX** from the following signs table by selection stickers and arrow rotation (available for selected luminaires).


PI05


PI21


PI22


E07


PI06


PI24


PI23


E24


PI15


PI25

P04


F01


PI17


PI26


E03


F02

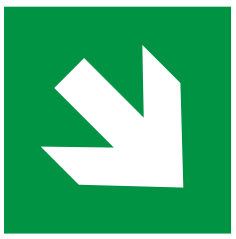

PI18


PI27


E04


F05

SET OF SAFETY SIGNS



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