

HYBRYD

LIGHTING THE WAY TO SAFETY



EXIT SIGN LUMINAIRES

EMERGENCY LUMINAIRES

EMERGENCY LIGHTING SYSTEMS

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HYBRYD was established in 1986 under the name: Przedsiębiorstwo Projektowania i Produkcji Urządzeń Elektronicznych Hybryd sp. z o.o. (Company of Designing and Manufacturing Electronic Appliances Ltd.) with its registered office in Zabrze. The Company manufactured then thick-layered hybrid systems for medical equipment. After that, the offer was extended to signalisation appliances for 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 extended. The manufacturing technology was extended with systems assembly on PCB boards.

Since 1997, the range of the products manufactured has been 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 and 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 fixture 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 family of lightening-up emergency fixtures to production 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 fixtures 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.

Hybryd has a complete designing and manufacturing back-up facility with the SMD automatic electronic assembly line, electric and mechanical workshops. The devices manufactured are characteristic for top quality; the Company ensures effective guarantee and post-guarantee service.

CEO dr inż.
Andrzej Krzesiński,

REFERENCE LIST

DOMESTIC IMPLEMENTATIONS

- Podium Park Kraków
- Fabios Maków Podhalański
- Galeria Północna Shopping Centre
- Copernicus Centre of Science
- Złota 44 Warszawa
- Hotel Europejski Warszawa
- LIDL Logistic Centre Kałuszyn
- OVO Hilton DoubleTree Wrocław
- Hilton DoubleTree Warszawa
- Puro Hotel network
- Hongbo Manufacturing Plant Opole
- 3M Manufacturing Plant Opole
- CH Libero Katowice
- Leroy Merlin shopping network
- IKEA Lublin
- GATEs Manufacturing Plant Legnica
- General Motors Tychy/Gliwice
- Castorama Shopping Network
- Gazoport Świnoujście

FOREIGN IMPLEMENTATIONS

- Fantastiko Markets - Bulgaria
- Palma Majorca Salon VIP Airport - Spain
- Oslofjord Convention Center - Norway
- Thyssen Krupps Factory - Romania
- Falkensteiner Hotel - Montenegro
- Almarai - Saudi Arabia
- Tullamore Distillery - Ireland
- Wendre Mattress Factory - Estonia
- Szekesfehervar Hospital - Hungary
- Shopping Centre Budapest MOM - Hungary
- Triple St-Prex Gymnastics Halls - Switzerland
- Shell Petrol Station Network (Central-Eastern Europe)
- Hotel Romana Makarska - Croatia
- Minibea- Slovakia
- Siemens Mohelnica – The Czech Republic
- Pardubice Airport – The Czech Republic
- Grand Hotel Karlove Vary – The Czech Republic
- Klimeska Hora Sports Centre – The Czech Republic



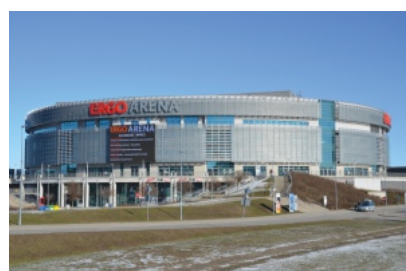
Sea Towers
Gdynia



Książ Castle
Wałbrzych



Złote Tarasy
Warszawa



ERGO ARENA
Gdańsk



Metro
Warszawa

- 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).

- 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 fixtures, installations and appliances supplying the emergency lighting with power:

-PN EN 1838: 2013-11 (E) Use of lighting. Emergency lighting
- PN EN 50172:2005 Emergency evacuation lighting systems - PN-EN 62034:2012 (E) Systems of testing emergency evacuation lighting supplied with power from batteries - PN-EN 60598-2-22:2015-01 Lighting fixtures – Part 2-22: Specific requirements
Lighting fixtures for emergency lighting
-PN-EN 50171:2007 : Central power supply systems
-PN-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-01256-4:1997Safety signs. Technical fire protection measures
PN-N-01256-5:1998 Safety signs. The rules of placing safety signs in escape routes and fire routes
- PN-EN ISO 7010; 2012Graphical symbols – colours. Safety colours and safety signs.

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.

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

1) in the following rooms:

- a) The auditorium of cinemas, theatres and concert halls as well as other entertainment halls,
- b)Conference halls, reading rooms and entertainment premises as well as sports halls intended for more than 200 participants,
- c)Exhibition halls at museums,
- d)Covering the net area exceeding 1 000 m² in garages lit with artificial light only,
- e)Covering the net area exceeding 2 000 m² in public utility buildings, collective residence buildings and manufacturing and warehousing buildings,

2) On escape routes:

- a.From rooms mentioned in item 1,
- b.Lit with artificial light only,
- c.At hospitals and other buildings intended mostly for use by people with hindered mobility capability,
- d) 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 PN-EN 1838

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

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.

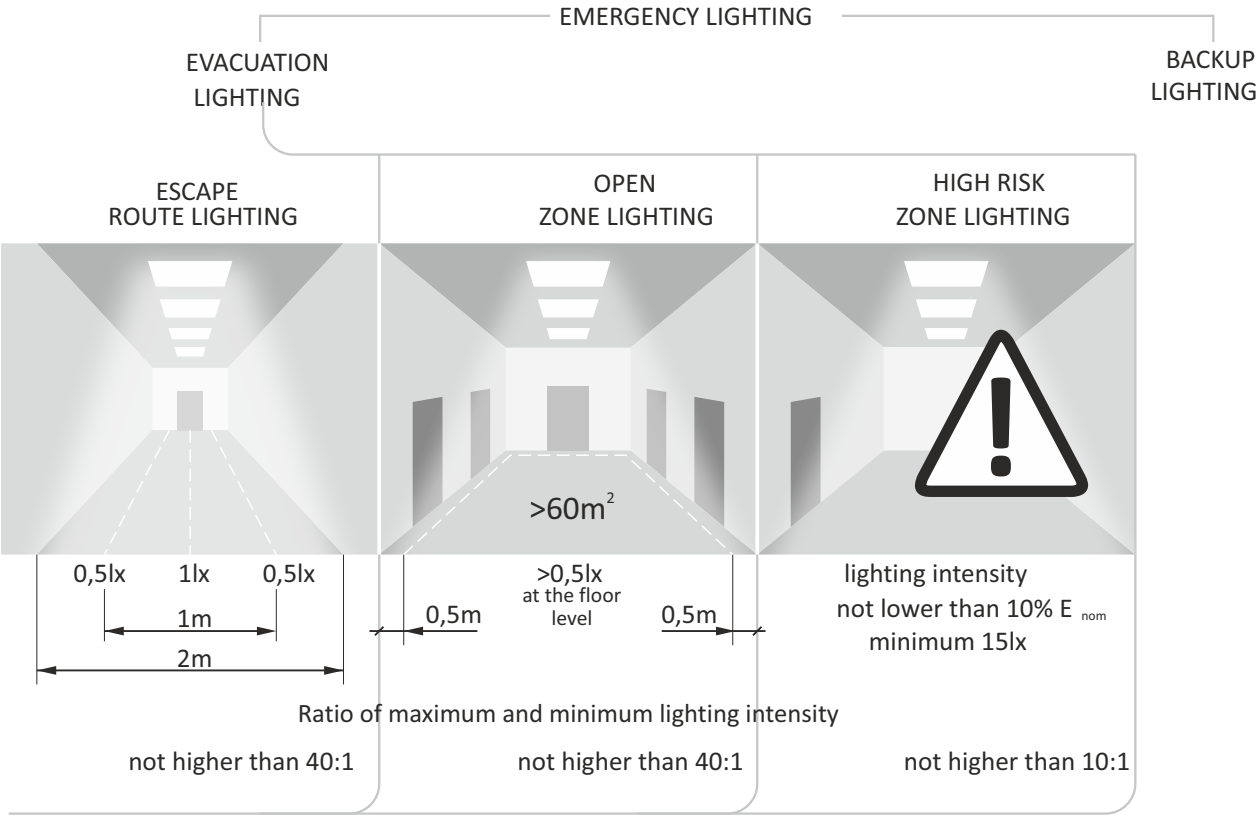
The purpose of escape route lighting is to enable safe exit from places where people stay through the creation of visibility conditions enabling the identification and use of escape routes and easy localisation and use of fire and safety equipment.

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 2 m 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.



GUIDELINES FOR EMERGENCY LIGHTING DESIGNING

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

We find critical points in a building, where in conformity with the standard, evacuation fixture must be placed. The most important ones are presented in illustrations (illustration at the bottom of the page). 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 8 m².

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

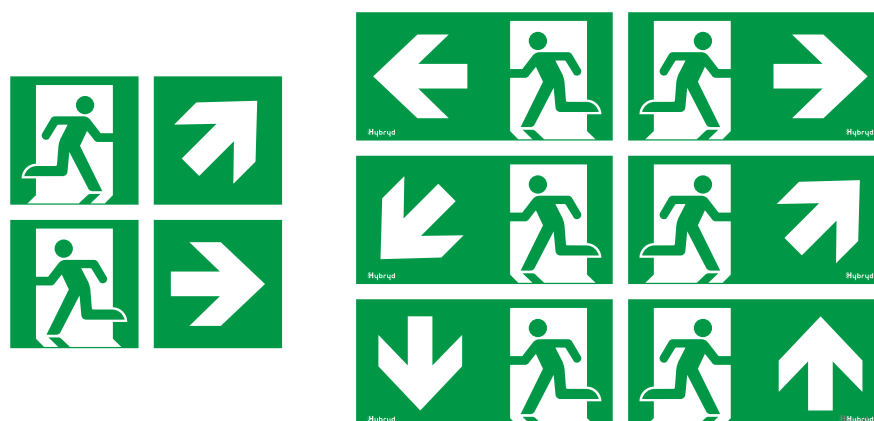
We check the photometric requirements of escape routes and open surfaces (illustration at the bottom of the page). Do not forget that each room should include at least 2 fixtures. With the escape routes determined and open surfaces and escape routes areas measured, we may search for the best solutions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

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

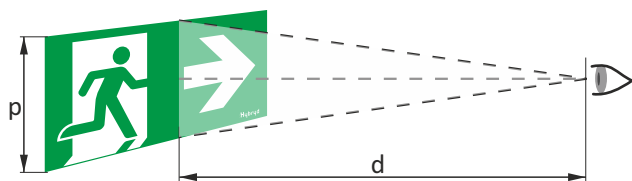
Step 3. How to check the visibility of evacuation signs?

We make sure whether evacuation signs on directional fixtures 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 RAL9003 – 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 fixture is approx. 30 m.

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



Basic and supplementary signs and exemplary lists



$$d = s \times p$$

d - sign recognition distance

p. - sign height

s - constant with the value of **100** for backlit signs from the outside or **200** for signs backlit inside

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

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

- Emergency fixtures 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 fixtures 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 PN-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 fixtures must be tested.

In the offer for low and medium-cubic capacity buildings, two types of evacuation fixtures prevail, i.e. equipped with a test press button, which is the most popular type of emergency lighting and fixtures 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 fixture effectiveness once a month, and the annual testing of the lighting time of each of a few or several fixtures 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 fixture supervision (too expensive), the best solution are fixtures with individual power supply and self-testing module (on the market it functions under the name of fixtures with autotest - AT).

Fixtures with AT usually have two diodes. If a fixture 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. Fixtures 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 fixtures with A test press button, this solution is only seemingly less economical. The replacement of batteries often costs as much as 30% of the fixture value – improper manual testing shortens the battery lifespan.

It is also worth remembering about LED solutions which are more frequently used in direction fixtures. The assessment of the effectiveness of fixtures 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 fixtures 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 fixtures with evacuation lighting. The benefits arising from the use of allocated emergency lighting fixtures in the POWER LED version include:

- 1) Lower quantity of fixtures
- 2) Lower energy consumption
- 3) Higher lifespan of light source

Allocated fixtures are characteristic for a repeatable installation, whereas many various fixtures were subject to modules what complicated the implementation and servicing.

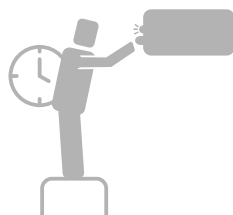
Location of escape route fixtures

in the escape route axis – intensity of the evacuation lighting must be min. 1 lx	at each exit door intended for evacuation exit	near stairs so that each step is lit directly
near each change in ground level	at each direction change	at each corridors crossing
outside and near each final exit	near each first aid point	near each fire aid appliance and alarm press button
		* near = no farther than 2m * information prepared based on the following standards: PN-EN 1838:2013 PN-EN 50172:2005P
near evacuation equipment for the disabled	near sheltering places and emergency points/press buttons for the disabled	

EMERGENCY LIGHTING SYSTEMS

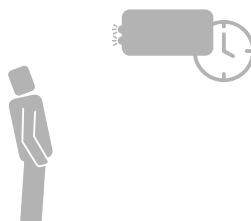
STANDARD

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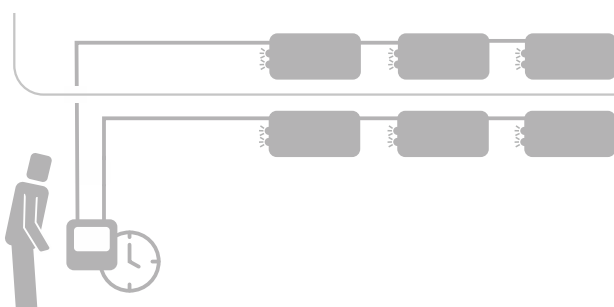
AUTOTEST

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CENTRALTEST

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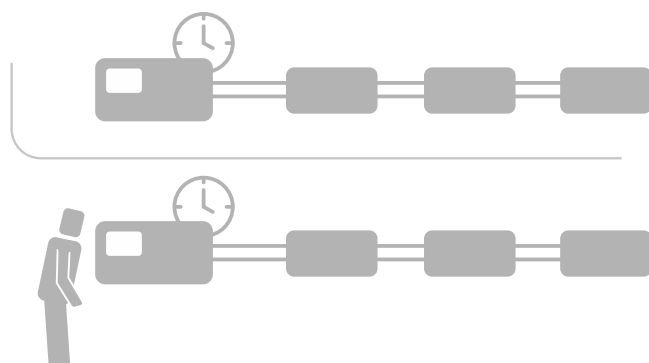
DYNAMIC

Page 24



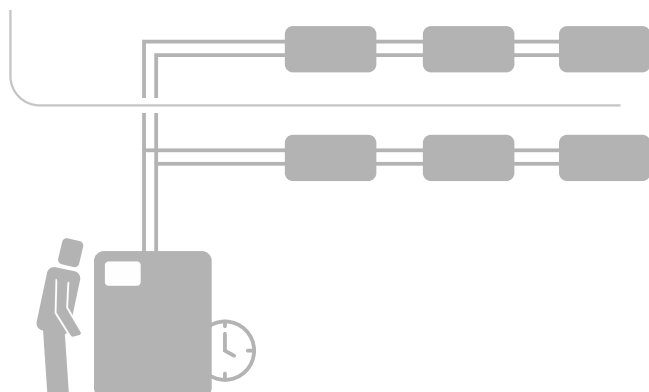
LOW VOLTAGE LVDBS

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HVCBS CENTRAL BATTERY

Page 28



STANDARD - ST

Evacuation fixtures 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. These appliances do not satisfy PN-EN 50172 standard and they cannot be used as emergency lighting within the meaning of such regulations.

Despite these restrictions, the interest in fixtures and modules in the STANDARD version is very high. This results from the fact that it is the cheapest type of emergency lighting and using it in small utility buildings raised their comfort and safety.

Also private persons often install the STANDARD fixtures 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 fixtures, make them obtain the emergency lighting functionality.

AUTOTEST - AT

The functionalities of evacuation fixtures 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 fixtures or modules; therefore, you do not need any additional appliances or service worker's activity in order to conduct testing required by PN-EN 50172 standard.

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

The microprocessor system in the AUTOTEST appliances is responsible for:

- Conducting functionality tests (TEST A) once per 30 days

- Conducting the emergency work time tests (TEST B)
- Intelligent battery charging and maintaining it in a good condition
- Signalling the operating state and malfunctions by means of a green and red diode.

The dates of subsequent tests are determined by the internal clock in accordance with the microprocessor software. Acc. to PN-EN 50172, TEST A must be carried out every 30 days, and TEST B every 360 days. 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 fixtures 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.

CENTRALTEST - CT

CENTRALTEST system is popular in medium-sized and large buildings where central monitoring is the only way to supervise effectively so many emergency fixtures, e.g. hotels, schools, hospitals, shopping centres, office buildings, industrial buildings, stadiums, railway stations. The principle of the system is to use emergency fixtures equipped with individual batteries and the microprocessor system with the possibility of communicating in the CT technology.

Each fixture has its own address and is connected by means of EIA/TIA-485 communication line with the control unit. The control unit supervises the working order of the system through performing TEST A and TEST B on the fixtures. All the information on the system condition may be read from the control units or saved as a report. Apart from fixtures and control units for the CENTRALTEST system, we also offer distributors, that is appliances enabling the connection of more fixtures and extending maximum distance between the control unit and the fixture.

Communication wiring

- In order to build a communication line, 2 strands are used led in a screen, e.g. YTKSY ekw 1x2x0.8
- When the use of a flame-retardant wire is required: YnTKSYekw 1x2x0.8.
- When the use of a non-combustible wire is required: HTKSHekw 1x2x0.8
- The communication line signals are labelled with the following letters: A, B and E. They are led out to the connectors of interface, distributor and fixture.
- 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 distributor. 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 fixtures, 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 fixtures or 31 distributors on a single communication line. Each appliance on the line must have a unique number within the range from 1 to 64 for fixtures and from 1 to 31 for distributors. 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. Distributors may not be connected with one another in series and in parallel with fixtures.

CT-BUS Communication

In this technology, distributors 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 distributors 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 fixtures.

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 distributors between the control unit and fixtures. Max total line length for a single loop is limited to 1200 m. H-311 CTL distributor 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, distributor) 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.

CONTROL UNIT VERSIONS

CENTRALTEST system functionality depends on the control unit used:

VERSION



Control unit H-302

The simplest solution which allows to monitor up to 7936 fixtures, connect BMS and servicing by means of a touch screen.

You can find more information on page 14.



Control unit H-312

The most extended solution ensuring practically unlimited possibilities, including: Monitoring of CT fixtures and HVCBS and LVDBS systems supplied with power centrally, visualisation of installations and localisation of devices, servicing of DYNAMIC fixtures and connection to BMS and SSP. Control unit is serviced by means of a large touch screen or remotely through the Internet browser.

You can find more information on page 16.



Computer set

Solution cheaper than H-312 where we provide the pre-configured PC set, software and special interface for communication with the fixture network. This option excludes supporting DYNAMIC and SSP fixtures and provides functionality identical to H-312.

You can find more information on page 18.



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 pre-configured computer set.

Min computer requirements may be found on page 22.

	COMMUNICATION CT	COMMUNICATION CT BUS	COMMUNICATION CT LOOP	SOFTWARE PC-4 VISUALISATION ACCESS THROUGH BROWSER	DYNAMIC SYSTEM	HVCBS / LVDBS CONNECTION	BMS CONNECTION
	●						●
	●	●	●	●	●	●	●
	●	●		●		●	●
	●	●		●		●	●

CONTROL UNIT H-302 C



APPLICATION

H-302 Control Unit is the simplest solution of the CENTRALTEST system, which allows to monitor up to 7936 fixtures, connect BMS and servicing by means of a touch screen.

The main purpose of control units is to supervise and control the efficiency of all the elements connected to such a unit. Efficiency tests are used for this purpose, which are started from the control unit level:

- Test A - a short 1-minute test of the fixture working order
- Test B - emergency operation time test
- Test C – communication test

During the tests, the fixture microprocessor system conducts a range of measurements, based on which it is capable of indicating precisely a type of a fault, i.e. damage of battery, charging, light source, etc. From the control unit level, it is also possible to control the fixture operation: by activating the emergency operation lock, force light operation, change an address and other functions. Test results may be saved on a pendrive or they may be browsed on the display.

Additionally, the control unit has a possibility of cooperating with BMS systems and fire systems through MODBUS or potential-free contacts.

The control unit detects automatically appliances but they must have a manually allocated number.

Functions

1. Performing automatic and manual tests on all the system elements.
2. Registering test results.

3. Generating alarms in the event of detecting irregularities.
4. Saving test results in the external memory, Pendrive.
5. Automatic lamps controlling in the group addressing system.
6. Lamps controlling from the fire protection group.
7. Night lighting control.

The Centraltest system installation consists of CT fixtures connected in parallel by means of EIA/TIA-485 line to the control unit. Max 64 fixtures may be placed on one control unit line. In order to connect more appliances, it is necessary to use H-311 CTB-CTB distributor. To the distributor input we connect lines from the control unit to the fixture lines. The distributor output makes a separate line for subsequent 64 fixtures. There may be max 31 distributors on one line from the control unit.

HOUSING

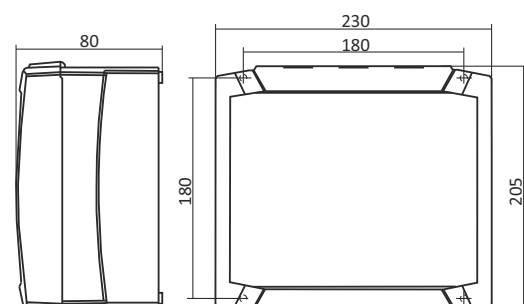
Housing material: high-quality ABS plastic and polycarbonate.

Housing colour: grey - RAL7035.

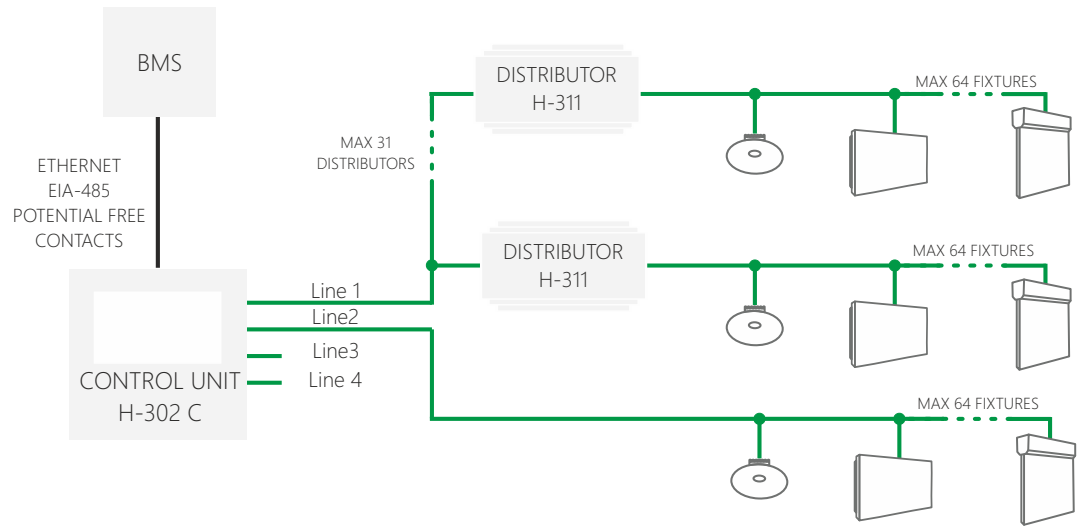
TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	230V AC 50Hz
Power consumption	5VA
Protection Class	I
IP rating	IP65
Radio-electric disturbances	Level N
Line galvanic separation	1500V
Line loading (1 of 4)	Max 64 lamps or 31 distributors
Battery operation time	12h
Number of the lamps serviced	7936 - independent addresses
Group controlling	Max 4 groups + 1 fire protection group
Zones controlling	Max 127 zones
Tests	Test A, B and C
Communication line length	up to 1000m

DIMENSIONS

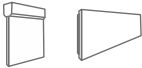


Exemplary connection diagram



LEGEND:

EXIT SIGN FIXTURES



ILLUMINATING FIXTURES



COMMUNICATION TECHNOLOGY



CONTROL UNIT H-312



APPLICATION

The control unit is an integrated control cabinet consisting of the industrial computer with the Control Unit PC 4 software, touch monitor, communication interface and buffer power adapter.

The cabinet is for on-wall mounting and it is ready for cooperation with all the Hybryd emergency lighting systems (it does not require any additional interfaces).

The most extended solution ensuring practically unlimited possibilities.

Advantages:

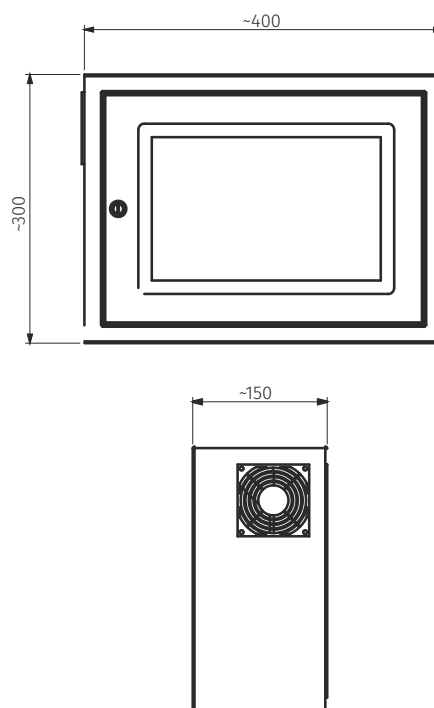
- Monitoring of CT fixtures and HVCBS and LVDBS systems supplied with power centrally.
- Visualisation of installations and localisation of appliances
- Control unit is serviced by means of a large touch screen or remotely through the Internet browser.
- Handling CT and CT- BUS, CT-LOOP basic communication technologies which allow to install up to 7 distributors on the route from the control unit to the fixture
- New transmission method – new author's communication protocol based on MAC addresses allocated during manufacturing what eliminates the need for manual numbering
- Advanced communication with BMS and SSP systems
- Dynamic fixtures handling – they indicate an evacuation direction depending on the hazard location

- A new addressing method – all the appliances in the CTB and CTL system have a unique serial configured and permanent equipment address, known as MAC. 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. Logic addresses may be changed during starting-up of the system from the user interface level.

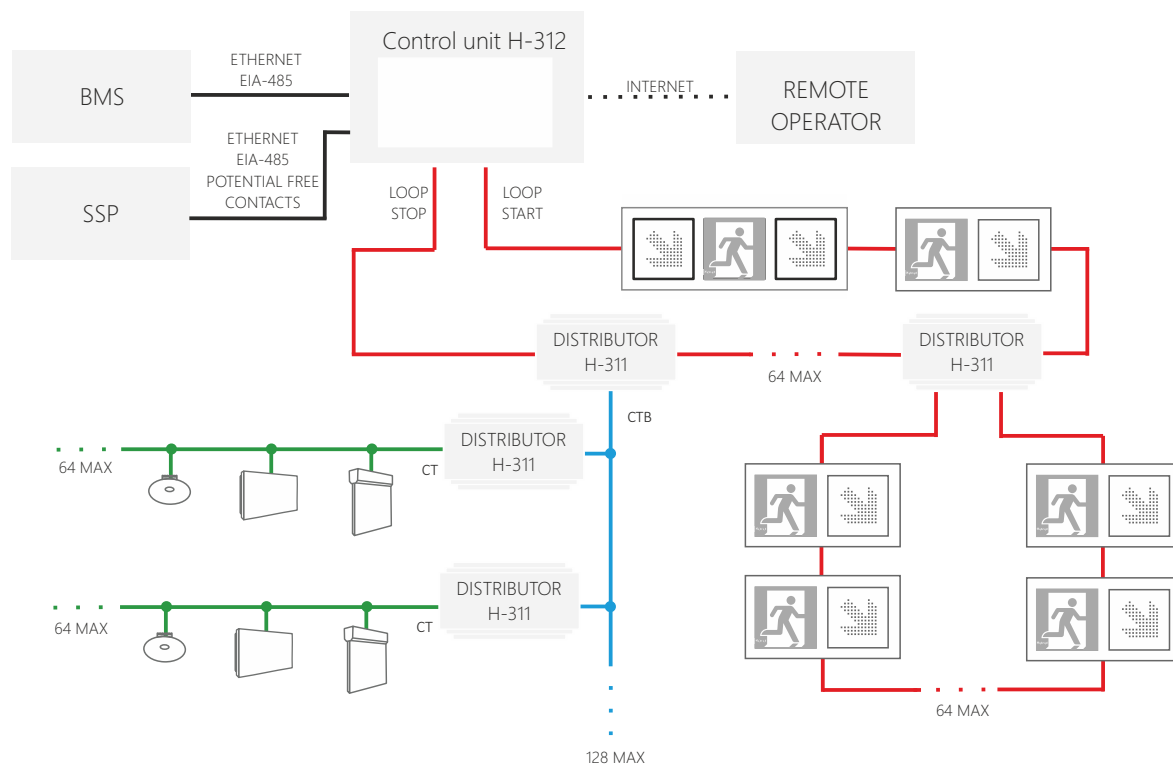
TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	230V AC 50Hz
Power consumption	52 – 153W
Protection Class	I
IP rating	IP 20
Battery	VRLA 12V 2,2Ah (1h) VRLA 12V 5Ah (2h) VRLA 12V 7,2Ah (3h)
Interfaces	1x Ethernet 1x USB 2.0
Screen	10,1", touch, storage
Processor	Intel 2x1,46 GHz
Memory	4GB
Operational system	Microsoft Windows 10
Output lines	2-4
Quantity of potential-free inputs	Up to 16
Dimensions	400 x 300 x 150mm
Weight	up to 15kg

DIMENSIONS

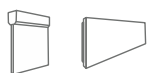


Exemplary connection diagram



LEGEND:

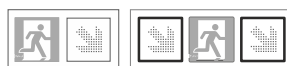
EXIT SIGN FIXTURES



ILLUMINATING FIXTURES



DYNAMIC FIXTURES



COMMUNICATION TECHNOLOGY



COMPUTER SET



Arrangement diagram of the computer set

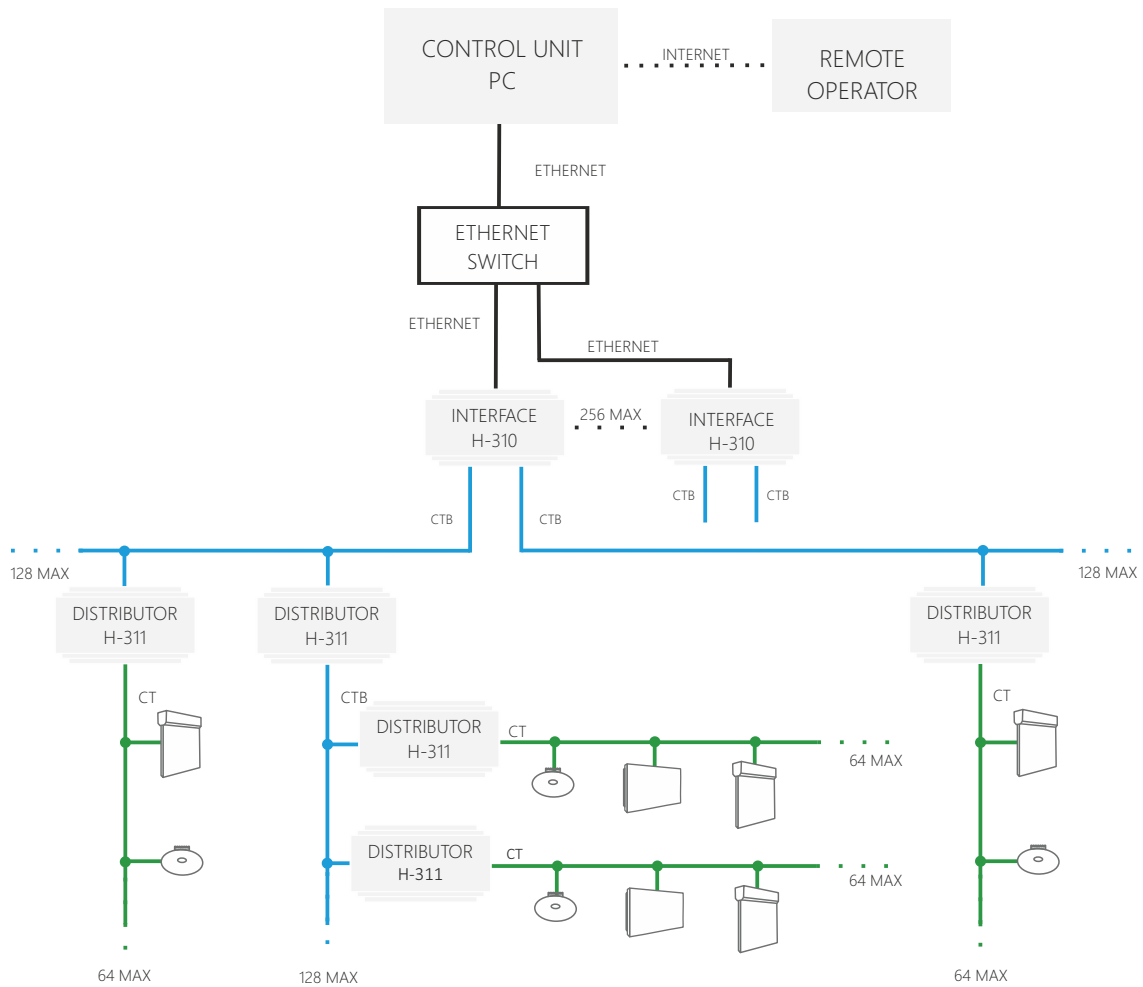
APPLICATION

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

TECHNICAL DATA

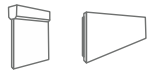
PARAMETER	VALUE
Hybryd „Centrala PC-4“ preinstalled software	Yes
The possibility of hanging the computer behind the monitor (VESA mounting) or on the wall	Yes
Computer housing dimensions	163x197x220mm (mini ITX)
Monitor	22"
Processor	Intel® Celeron
Memory RAM	4GB
Hard drive	SSD
Operational system	Microsoft Windows 10
Interface Ethernet	Yes
Serial port RS-232	Yes
Keyboard and mouse	Yes
Backup power units UPS	Yes

Exemplary connection diagram



LEGEND:

EXIT SIGN FIXTURES



ILLUMINATING FIXTURES



COMMUNICATION TECHNOLOGY



INTERFACE H-310



APPLICATION

The task of H-310 interface is mediation between PC and the communication network of HYBRYD emergency lighting fixtures.

It is equipped with ETHERNET 10/100Mbps port by means of which it is connected directly or indirectly through the Ethernet switch to the PC and two output lines where distributors may be located or on one of them, directly fixtures.

DESIGN

- The appliance consists of ETHERNET interface and embedded H-311 distributor.
- The appliance elements are placed in the module-type housing dedicated to mounting on the DIN busbar, where it takes 4 standard widths or on the wall.
- The appliance is supplied with power by means of two lines (L, N) with the section 0.5 – 1.5mm² from 230V AC 50/60Hz network.
- The embedded Li-Ion battery allows for uninterrupted operation of the appliance for more than 3h.
- The appliance front includes a label with the ETHERNET interface network address and the equipment address of the embedded distributor.

COMMUNICATION

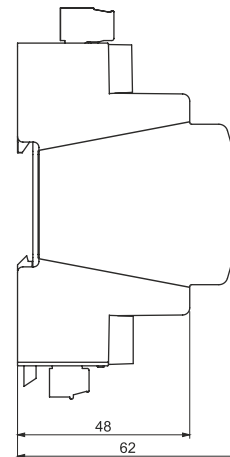
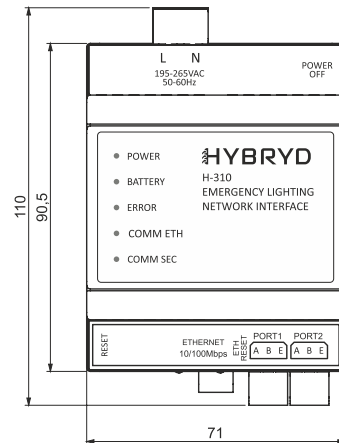
H-310 interface has two independently operating communication connections (ports), where one may operate as CT and CT-BUS (PORT2) and the other one as CT-BUS (PORT1) only. Both connections may be coupled as CT- LOOP.

TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	230V AC 50/60Hz
Power consumption	< 8VA
Power coefficient	0,5
Protection class	II
IP rating	IP 20
Communication line length	CT 1000m CT-BUS, CT-LOOP 1200m
Battery	Li-Ion 3,7V / 2,2Ah
Operation time with power supply failure	> 3h
Communication technologies	1x CT or 2x CT-BUS 1x CT-LOOP **
Ambient temperature	+5°C ÷ +35°C
Housing mounting	DIN busbar, 4M; Wall*
Power supply cable	0,5 – 1,5mm ²
Housing	PC/ABS mixture

* Power supply terminal must be covered by means of a cable tray.
** Possible configuration in the software

DIMENSION



DISTRIBUTOR H-311



APPLICATION

The task of H-311 distributor is to extend the system communication network with subsequent communication lines, where other H-311 distributors are placed or emergency lighting fixtures made by HYBRID.

DESIGN

The distributor 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 busbar, where it takes 4 standard widths or on the wall.
- H-311 distributor may be mounted in electric switching stations provided that the distance of power supply lines is not shorter than 10 cm.
- The appliance is supplied with power by means of two lines (L, N) with the section 0.5 – 1.5mm² from 230V AC 50/60Hz network.
- The embedded Li-Ion battery allows for uninterrupted operation of the appliance for more than 3h.
- The appliance front includes a label with the CT MAC address and the distributor number.

COMMUNICATION

H-311 distributor has two communication terminals which, depending on performance, may operate in CT-BUS or CT-LOOP communication technology. By means of the distributor, 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 distributor to the superior appliance. The second terminal is subordinate terminal (SECONDARY) and it is used for connecting other distributors or fixtures.

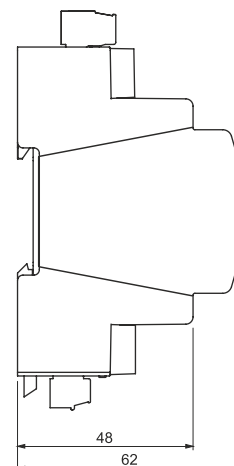
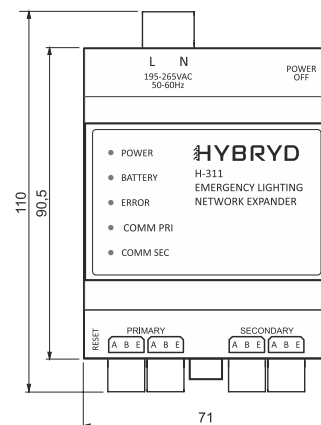
TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	230V AC 50-60Hz
Power consumption	< 8VA
Power coefficient	0,5
Protection class	II
IP rating	IP 20
Communication line length	CT 1000m CT-BUS, CT-LOOP 1200m
Battery	Li-Ion 3,7V/2,2Ah
Operation time with power supply failure	>3h
Communication technologies	CT; CT-BUS; CT-LOOP **
Ambient temperature	+5°C ÷ +35°C
Housing mounting	DIN busbar, 4M; Wall*
Power supply cable	0,5 – 1,5mm ²
Housing	PC/ABS mixture

* Power supply terminal must be covered by means of a cable tray.

** Possible configuration in the software, 2xCT-BUS available only in the CTL version

DIMENSION



PC-4 SOFTWARE

Hybryd "PC-4 Control Unit" software is a system central point enabling easy management of all the system elements. It operates under the control of Microsoft Windows.

The programme consists of three parts:

- Independent system service responsible for communication,
- WWW server providing user's interface
- SQL Database.

User interface implemented based on WWW technology. Any Internet browser can be used for operation. The interface is suitable for operation with the touch screen, full dimension and compact telephone/tablet screen.

Functions

- Performance and planning efficiency tests
- Detailed reporting on the condition of devices
- Configuration of dynamic fixtures
- Fixtures controlling
- Advanced diagnostics
- Localisation of damage in the building plan
- Supporting all centralised Hybrid systems:
 - CENTRALTEST System
 - DYNAMIC System
 - LVDBS System
 - HVCBS System

Integration with BMS

Integration with the BMS system is possible by two means:

- through ETHERNET interface and MODBUS TCP/IP protocol,
- through EIA-485 interface and MODBUS or RTU.

Visualisation

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

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

Reports

The system is able to generate many reports depending on a template. It is possible to report the overall state of the system and appliances or create a detailed report with the list and description of incidents near each appliance. Reports are saved in PDF and HTML and they are archived in the system with the possibility of subsequent preview.

Ordering

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

MINIMAL COMPUTER REQUIREMENTS

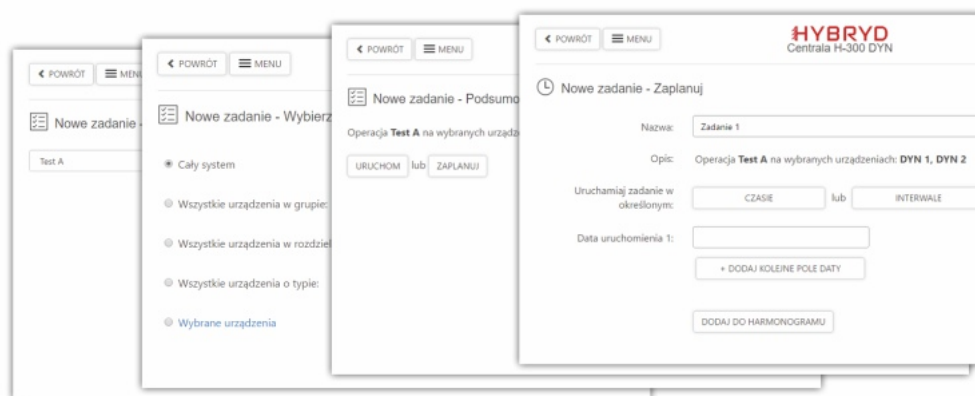
PARAMETR	WARTOŚĆ
Processor	Double-core 1,5 GHz or better
Memory RAM	2 GB
Free disk space	10 GB
Communications port	1 x USB or 1 x Ethernet
Operational system	Windows 7/8/10
Optionally	Backup power unit UPS



Menu



System status



Task schedule creator



Building plan visualisation

DYNAMIC SYSTEM



DYN system is the element of CENTRALTEST system and it is characteristic for the use of SPARK DYN type fixtures. 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 fixtures, 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 fixtures may be connected with static fixtures to one H-312 control unit or they may have a separate independent control unit. DYN fixtures require loop communication – they have two connectors to which both ports from the control unit are connected and fixtures 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 distributor, or others, which – as with static fixture distributor, 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) distributor; at the same time, at the distributor input, a loop from the control unit will be connected, and at the output, a line for static fixtures.

Communication with SSP

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 distributor or dynamic fixture. It is also possible to use ADAM-4055 converter.

SPARK DYN

SPARK DYN dynamic lighting fixtures are constructed based on aluminium sections used in SPARK fixture for ensuring visual consistence between classic (static) evacuation lighting fixtures (SPARK) and dynamic evacuation lighting fixtures (SPARK DYN). The fixture front is made of steel sheet and together with all its visible elements is powder-coated with a required colour.

The fixture has a module construction. There are two types of modules:

- Pictogram module - E001 or E002 sign in conformity with PN- EN ISO 7010:2012
- Arrow/cross module - displaying an arrow consistent with the shape prescribed in PN-EN ISO 7010:2012 and a cross as a prohibition sign.

The fixture may have from one to four arrow/cross modules and from one to two pictogram modules.

Fixture operation modes

Fixture 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.

Messages presented by fixtures

The signs of arrow, cross and pictogram state are totally independently configurable for a given visual message. The set of signs included in the dynamic fixture message:



Basic sign E001 or E002 in accordance with PN-EN ISO 7010 with possible total extinguishing

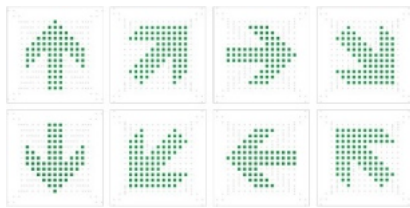


Sign supplementing arrows, referring to the shape in accordance with PN-EN ISO 7010

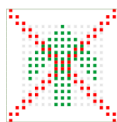


Cross sign

An arrow sign may be rotated every 45 degrees which provides the following directional messages:



An arrow sign may be crossed out with a red cross meaning prohibition of evacuation in a given direction.



Evacuation scenarios configuration

In order to configure the system, information on messages is required, what fixtures 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 fixtures 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 fixtures. If saving for all the fixtures is correct, the system obtains a configured status. Configuration may be changed in any moment, this activity does not require manufacturer's intervention.

Scenario structure

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

Grupy:
Nowa grupa

NAZWA	IŁOŚĆ 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

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 fixture, by selecting a message proper for a situation, which must be displayed.

ADRES URZĄDZENIA		MAC URZĄDZENIA		NAZWA OPRAWY		RODZAJ OPRAWY								
40109		C42FA541		SPARK		SingleSided								
PRACA SEKOWA		 		30% ☐		Brak ☐								
PRACA AWARYJNA		 		100% ☐		Brak ☐								
NAZWA GRUPY		STREFA 1 (1)	STREFA 2 (2)	STREFA 3 (3)	STREFA 4 (4)	STREFA 5 (5)	STREFA 6 (6)	STREFA 7 (7)	STREFA 8 (8)	STREFA 9 (9)	NAZWA GRUPY	JASNOŚĆ PICTOGRAM 1	JASNOŚĆ PICTOGRAM 2	
GRUPA 02		1	X	X	X	X	X	X	X	X	GRUPA 02	 	Brak ☐	Brak ☐

Fixtures 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.

LOW VOLTAGE - LVDBS



Low voltage system of LVDBS buffer power supply is designed in accordance with PN-EN 1838, PN-EN 50171, PN - EN 50172, PN-EN 50272. Emergency operation time is 1h or 2h. The system consists of LVDS unit which contains control and power supply electronic systems with batteries and fixtures connected to it. Hermetic maintenance-free batteries with the lifespan of 10 years are used. These batteries are characteristic for low self-discharging and low gassing.

LVDBS system is used for supplying emergency lighting with power. It is dedicated to operation:

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

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

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. YTKSY ekw 1x2x0.8 Communication with fixtures supplied with the voltage of 24VDC takes place through lines

power supply. Address modules are used for individual fixtures control.

LVDBS unit

LVDBS (LPS) 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 H-312 Control Unit or computer set through TCP/IP connector ETHERNET. Communication between cabinets enables viewing the system results and states by means of the main unit.

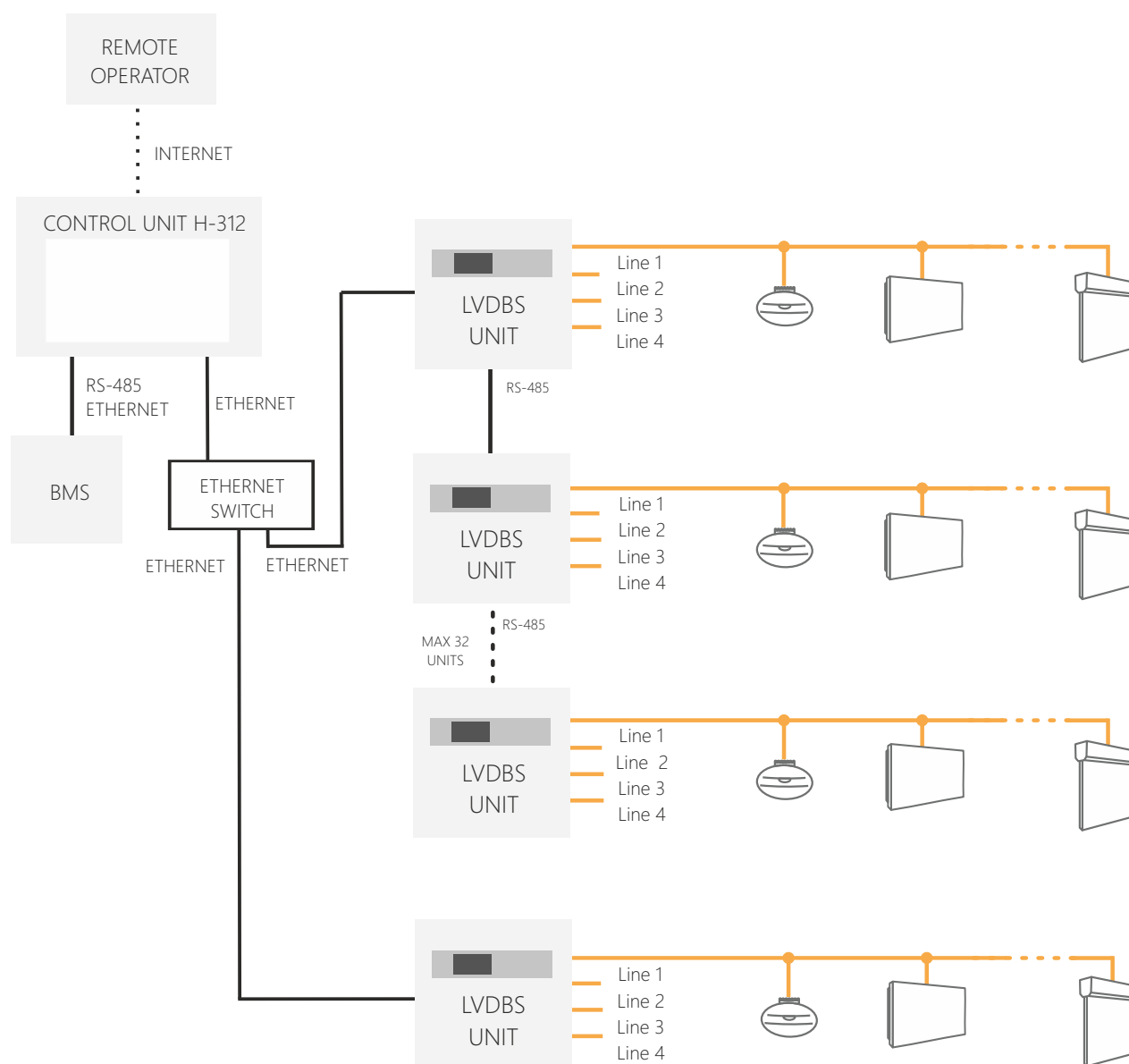
LVDBS system parameters

- User-friendly menu,
- State signalisation from each line
- Small system size
- SELV network
- possible creation of fire signalisation scenarios for respective lines
- Automatic performance of tests in accordance with PN-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.

Fixtures

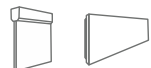
LVDBS system supplies the emergency and evacuation lighting fixtures with the voltage of 24VDC. If there is no power supply, the system automatically switches to the battery mode. Fixtures do not have their own batteries. A wire section depends on distance between the system and the fixture and it is selected at the designing stage.

Exemplary connection diagram (*H-312 CONTROL UNIT is an optional element)



LEGEND:

EXIT SIGN FIXTURES



ILLUMINATING FIXTURES



COMMUNICATION TECHNOLOGY

LVDBS

HVCBS - CENTRAL BATTERY



High-voltage central battery system (HVCBS) enables supplying with power, controlling the emergency and evacuation lighting fixtures. The system is designed in accordance with PN-EN 50171, PN-EN 50172, PN-EN 50272. 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 fixtures connected to the Central Battery System are located in end circuits. Communication with fixtures 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 PN-EN 50172 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 PN-EN 50172).

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 PN-EN 50171.

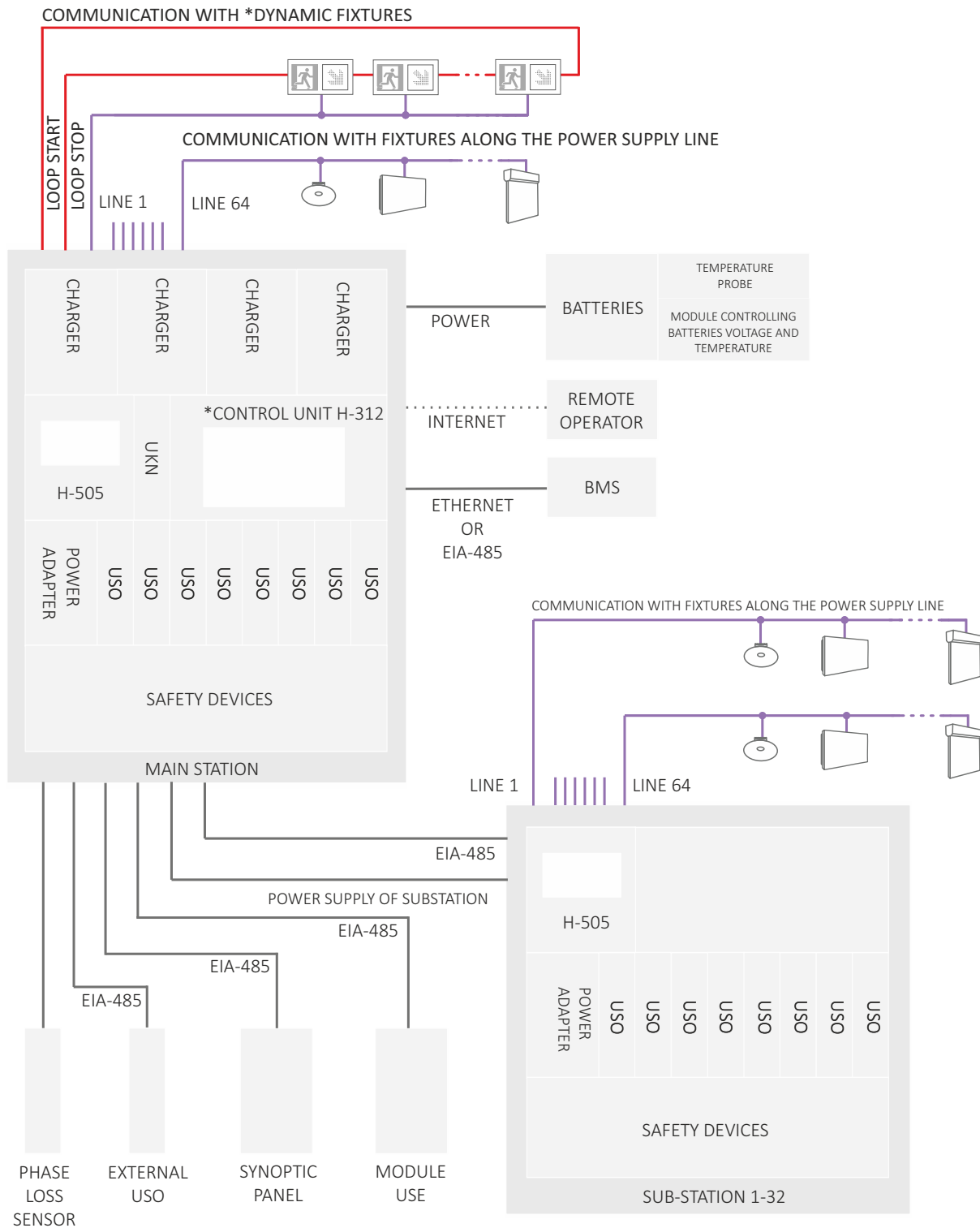
The use of dedicated safety devices for circuits, automatics and batteries affects the increase in the safety level. HVCBS System is dedicated to supply the emergency and evacuation lighting circuits in the IT network in the battery mode.

Owing to H-505 controller, HVCBS system operates autonomously, connection to H-312 central unit or computer set is optional.

The main parameters of HVCBS

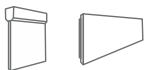
- Power supply voltage: 3x230VAC
- Output voltage: 230VAC or 220VDC
- Max power of reception: 16kW
- Touch LCD with user-friendly menu
- Automatic performance of tests in accordance with PN-EN 50172
- Saving test results on the SD card in accordance with PN-EN 50172
- Access history
- Possibility of describing end circuits at the controller level
- Possibility of the individual configuration of access to the system
- Monitoring the presence of voltage from basic lighting switching stations in accordance with PN-EN 50172
- Possibility of extending the system with sub-stations (max 32 sub-stations)
- Max 64 circuits for one system unit
- Automatic detection of fixtures in the system
- Monitoring fixtures or circuits
- Communication with fixtures by means of a power supply line
- Configuration of fixture operation modes, maintained/non-maintained
- Night operation mode on selected fixtures
- 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

Exemplary connection diagram (* H-312 CONTROL UNIT and dynamic fixtures are an optional element)

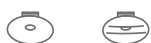


LEGEND:

EXIT SIGN FIXTURES



ILLUMINATING FIXTURES



DYNAMIC FIXTURES



COMMUNICATION TECHNOLOGY

CT LOOP

HVCBS

Communication

Communication between the central station and sub-stations takes place by means of EIA/TIA-485 bus. A communication line uses 2 strands led in a screen, e.g. YTKSY ekw 1x2x0.8

In HVCBS the working order of fixtures may be checked through line control (end circuit current measurement) or through the individual control of fixtures with the use of address modules.

Communication with fixtures 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 cooperates with BMS (Building Management System) by means of MODBUS TPC/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 PN-EN 50172.

SZC cabinet structure.

Internal modules:

System structure in standard 19" which includes the following modules:



H-505 module - main unit controlling HVCBS, its most important functions:

- Monitoring and controlling all the internal sub-assemblies of the system
- Communication with sub-stations
- Communication with building management systems - BMS
- User interface - touch LCD
- Automatic performance of tests in accordance with PN-EN 50172

- Keeping test results.
- Saving test results and settings in the external USB memory
- Possibility of describing end circuits



USI module - module with potential-free contacts inputs and relay outputs. Potential-free contact inputs may be coupled with any circuits and controlled.



USO module - module controlling the operation of end circuits / lighting fixtures. Single module allows for connecting two end circuits.

UKN module - module allowing for measurements of parameters such as battery voltage, charging current and discharging current of batteries, loading current, insulation state monitoring.

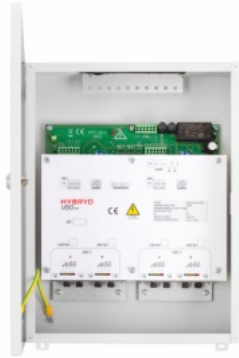
Rectifier - used for charging batteries, designed in accordance with PN-EN 50272-2. Owing to solutions accepted for the module, current surge after connecting to the network is ensured. Output specification of the rectifier with impulse output current limitation of the constant voltage-constant current type. It has overvoltage 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.

H-312 control unit module - In-built control unit supplies all the H300 system possibilities, it also allows for controlling DYN fixtures which may be supplied with power from USO module.

External modules

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

PARAMETER	VALUE
Power supply	24V DC
Maximum current consumption	0,1A
Protection class	I
IP rating	IP 20
Operating temperature range	-10°C ÷ +40°C
Relative humidity	40% ÷ 75%
Data transmission	Rs485
Wire section	max 1,5mm ²
Dimensions (W x SZ x G)	110mm x 105mm x 60mm
Assembly	DIN busbar



External USO - 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.

PARAMETER	VALUE
Power supply	230V AC 50Hz/ 216V DC
Max power of reception	2kW
Total quantity of system circuits HVCBS	64
Protection class	I
IP rating	IP 20
Operating temperature range	-10°C ÷ +40°C
Relative humidity	40% ÷ 75%
Data transmission	Rs485 (internal)
Wire section	max 4mm ²
Dimensions (W x SZ x G)	272mm x 261mm x 65mm
Assembly	Surface



PW-01 module 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.

Signalisation and messages:

- System in the working order
- Battery voltage
- Battery current
- Operation type (ac/dc/test)
- Std test error (shorting)
- Test a error (fixtures)
- Test b error (battery)
- Communication error
- Charging error
- Battery error (circuit break)
- Sd error (no memory card)
- System lock
- No connection (signal)

Information and messages are displayed from all the stations and sub-stations of the system as well as from simulated sub-stations.

Connection method:

PW-01 module may be connected to the system by two means: through a terminal block or connector on PCB (EPS-5422). This depends on the structure of the main station.

PARAMETER	VALUE
Power supply	12V ÷ 24 V (DC)
Maximum current consumption	0,3 A
Protection class	I
IP rating	IP 20
Operating temperature range	-10°C ÷ +40°C
Relative humidity	Max 50%
Data transmission	Rs485
Connectors	max 1,5mm ²
Dimensions (W x SZ x G)	80mm x 120mm x 25mm
Assembly	Surface

EMERGENCY FIXTURES

Operation states

Fixtures may be in one of three operation states:

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

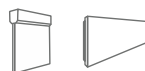
Operation mode

Depending on the fixture 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 fixture 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

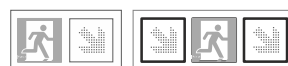
Depending on the purpose, we differentiate 3 types of emergency fixtures:



- Exit sign - they indicate evacuation direction, they have a pictogram consistent with PN-EN ISO 7010.



- Illuminating - fixtures lightening the escape route.



- Dynamic - indicate evacuation direction depending on the hazard location.

Performance	Individual power supply	Central power supply	Individual monitoring	Central monitoring	Individual addressing (it allows for testing and visualising the condition of each fixture)	No addressing (testing the working order of all the appliances in the line without indicating the fault location)
ST	●		●			
AT	●		●			
CT	●			●	●	
CBAM (HVCBS)		●		●	●	
LVAM (LVDBS)		●		●	●	
CB (HVCBS)		●		●		●
LV (LVDBS)		●		●		●

Lens

Due to the manner of light distribution, depending on the lens mounted on LEDs, we use proper optics:

For open zones:

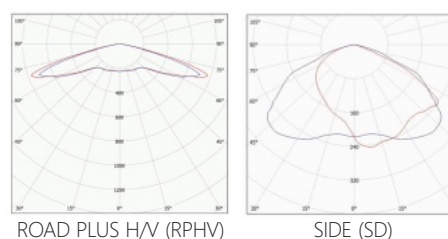
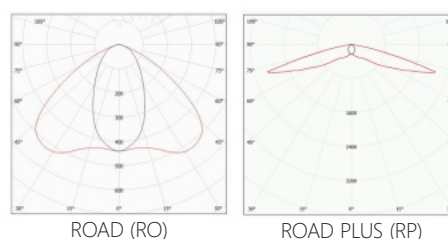
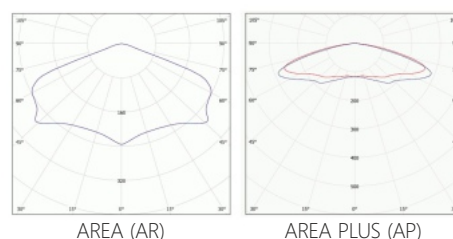
- AREA (AR)
- AREA PLUS (AP)

For escape routes:

- ROAD (RO)
- ROAD PLUS (RP)

For asymmetric zones:

- ROAD PLUS H/V (RPHV)
- SIDE (SD)



EXIT SIGN

**SPARK SGN LED**

Page 34

**PRIMOS SGN LED SS**

Page 36

**UTILIGHT SGN LED**

Page 38

DYNAMIC

**PRIMOS SGN LED DS**

Page 40

**SPARK DYN**

Page 42

ILLUMINATING

**PRIMOS CLA LED**

Page 44

**PRIMOS II LED**

Page 46

**KWADRA FL/SU**

Page 48

**OWA ALSU LED**

Page 50

**OWA FL LED**

Page 52

**OWA SU LED**

Page 54

**ORBIT SU LED**

Page 56

SPARK SGN LED

SPARK LED



CE IP 40

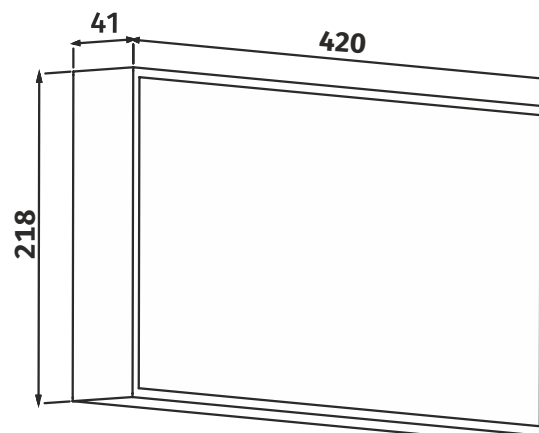
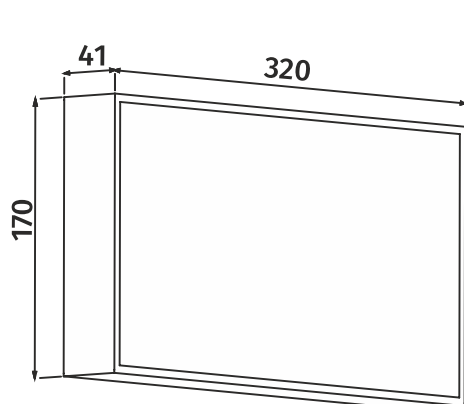
30×15 
30 m

40×20 
40 m



- Fixture indicating evacuation direction
- LED signalling the fixture operation status (only ST/AT/CT)
- Batteries anti-deep discharging protection
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- Surface mounting
- Housing is made of aluminum, lamp shade of PC
- Mounting inside the building
- Available in two size

DIMENSIONS



TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	ST / AT / CT
	230V AC 50/60Hz
	CBAM
	230V AC 50/60Hz, 170–275V DC
	CB
	230V AC 50/60Hz, 80–275V DC
	LVAM
	15–32V DC
Protection Class	I
IP rating	IP 40
Light source	LED Strips ¹
Light temperature	5000K
Colour rendering index	70
Light source power	2W
Light source durability	> 50 000h
Battery type	Ni-MH HU
Battery voltage	4,8V
Battery capacity	1,0Ah; 1,6Ah; 2,1Ah
Battery charging time	< 24h
Emergency operation time	1h, 3h
Ambient temperature	ST / AT / CT
	+5 ÷ +45°C
	CB/CBAM
	-10 ÷ +55°C
	LVAM
	-25 ÷ +60°C
Power supply wire section	0,5–1,5mm ²
Through connection	YES
Surface wiring	No

¹Non-exchangeable, but serviveable light source

HOUSING

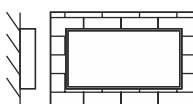
Housing material:
aluminum

Lamp shade material:
PC

SYSTEMS

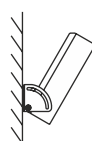
ST, AT, CT, CB, CBAM, LVAM

MOUNTING TYPES



W1

MOUNTING KITS



W137

PRIMOS SGN LED SS

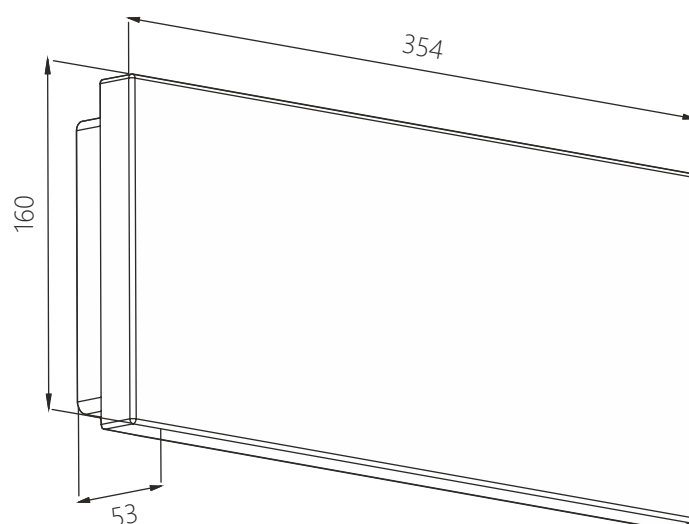


CE IP 65



- Fixture indicating evacuation direction
- LED signalling the fixture operation status
- Anti-deep discharging protection batteries
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- On-wall, surface, suspended, recessed mounting
- Plastic housing

DIMENSIONS



TECHNICAL DATA

PARAMETER			VALUE
Power supply voltage	AT / CT		230V AC 50/60Hz
	CB		230V AC 50/60Hz 80–275VDC
	CBAM		230V AC 50/60Hz 170–275VDC
	LVAM		15–32V DC
Protection Class	AT / CT		II
	CB / CBAM		I
	LVAM		III
IP rating			IP65
Light source			LED Module ¹
Light temperature			5000K
Light source power			1W
Light source durability			> 50 000h
Battery type			Ni-Cd, Ni-Mh
Battery voltage			4,8V
Battery capacity			1,0; 1,6 Ah
Battery charging time			< 24h
Emergency operation time			1h, 3h
Ambient temperature	AT / CT	TS	+5 ÷ +45°C
		TE	-20 ÷ +45°C
	CB / CBAM	TS	-10 ÷ +55°C
		TE	-25 ÷ +65°C
	LVAM		-25 ÷ +70°C
Power supply wire section			0,5–2,5mm ²
Power line diameter			≤13mm
Communication wire diameter			≤7mm
Through connection			Yes
Surface wiring			Yes

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

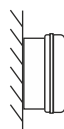
Housing material:
PC/ABS mixture

Lamp shade material:
Opal PC

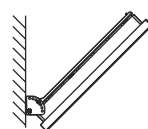
SYSTEMS

AT, CT, CB, CBAM, LVAM

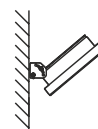
MOUNTING TYPES



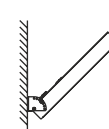
MOUNTING KITS



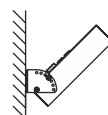
W121



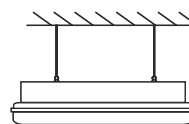
W122



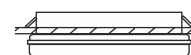
W221



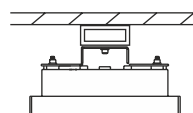
W222



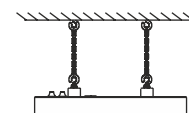
C101 + C200/C201



C105



C106



C114 + C200/C201

UTILIGHT SGN LED



CE IP 40

30×15 
30 m

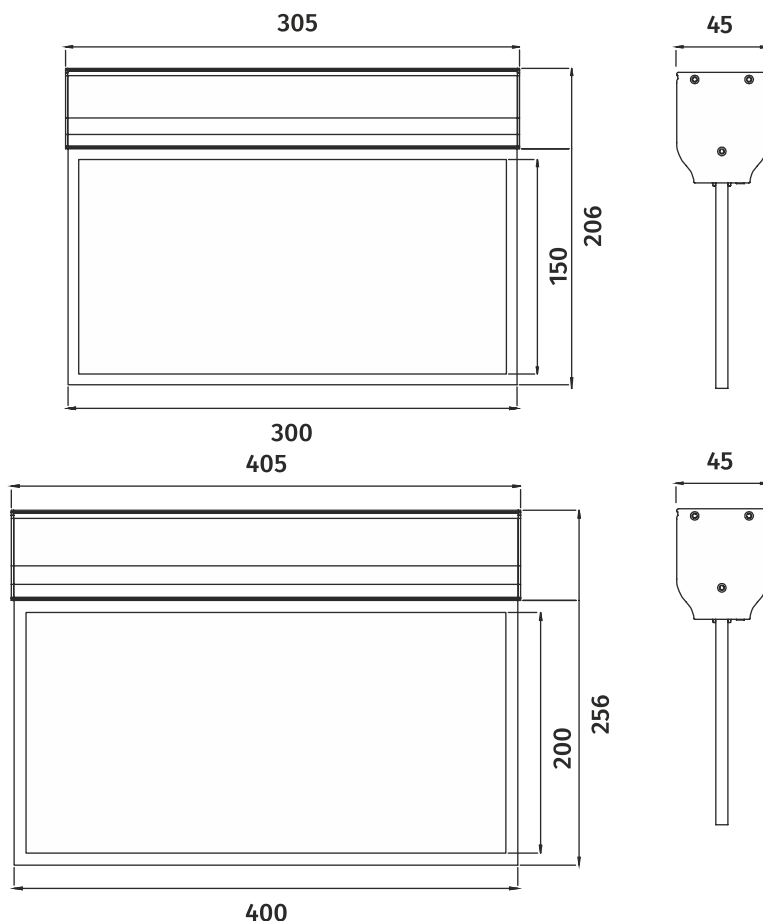
40×20 
40 m



- Fixture indicating evacuation direction
- LED signalling the fixture operation status
- Batteries anti-deep discharging protection
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- On-wall, surface, suspended, recessed, semaphore mounting
- Aluminium profile housing, plexi board
- Mounting inside the building
- Available in many variants of housing size



DIMENSIONS



TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	ST / AT / CT CB / CBAM LV / LVAM 230V AC 50/60Hz 230V AC 50/60Hz 170–275VDC 15–32V DC
Protection Class	ST / AT / CT CB / CBAM LV / LVAM I I III
IP rating	IP40
Light source	LED Strip ¹
Light temperature	5000 – 5700K
Light source power	1W
Light source durability	> 50 000h
Battery type	ST / AT / CT Li-Ion
Battery capacity	ST / AT / CT 0.7Ah; 2.2Ah
Battery charging time	ST / AT / CT 12h
Emergency operation time	ST / AT / CT 1h; 3h
Ambient temperature	ST / AT / CT CB / CBAM LV / LVAM +5 ÷ +40°C -25 ÷ +55°C -25 ÷ +60°C
Power supply wire section	0,5–2,5mm ²
Power line diameter	≤ 17mm
Communication wire diameter	≤ 7mm
Through connection	Yes
Surface wiring	Yes

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

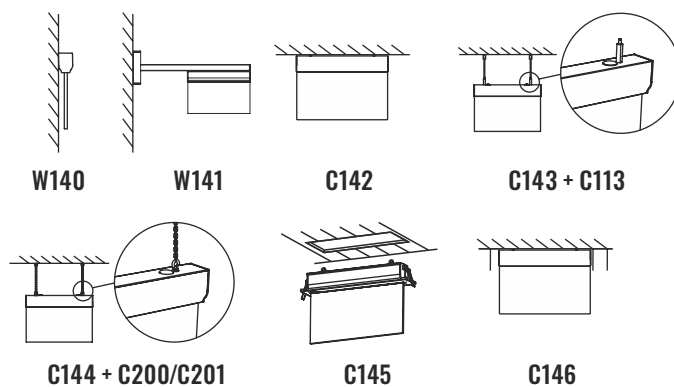
Housing material:
powder coating aluminium

Lamp shade material:
Clear PMMA

SYSTEMS

ST, AT, CT, CB, CBAM, LV, LVAM

MOUNTING KITS



PRIMOS SGN LED DS

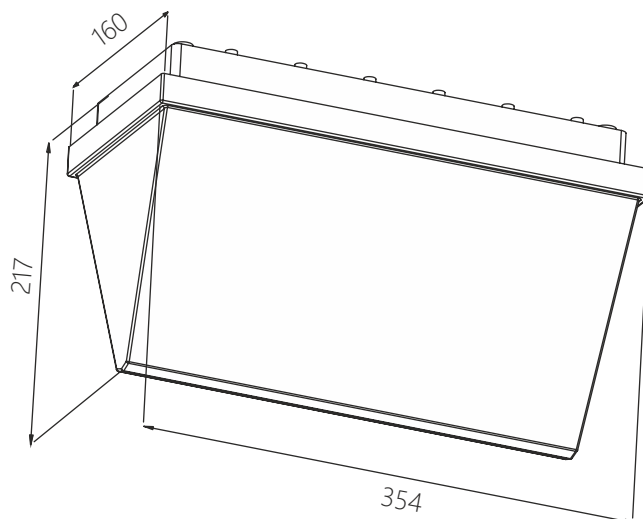


CE IP 65



- Fixture indicating evacuation direction
- LED signalling the fixture operation status
- Batteries anti-deep discharging protection
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- On-wall, surface, suspended, recessed mounting
- Plastic housing

DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE	
Power supply voltage	AT / CT	230V AC 50/60Hz	
	CB	230V AC 50/60Hz 80–275VDC	
	CBAM	230V AC 50/60Hz 170–275VDC	
	LVAM	15–32V DC	
Protection Class	AT / CT	II	
	CB / CBAM	I	
	LVAM	III	
IP rating		IP65	
Light source		LED Module ¹	
Light temperature		5000K	
Light source power		1W	
Light source durability		> 50 000h	
Battery type		Ni-Cd, Ni-MH	
Battery voltage		4,8V	
Battery capacity		1,0; 1,6 Ah	
Battery charging time		< 24h	
Emergency operation time		1h, 3h	
Ambient temperature	AT / CT	TS	+5 ÷ +45°C
		TE	-20 ÷ +45°C
	CB / CBAM	TS	-10 ÷ +55°C
		TE	-25 ÷ +65°C
	LVAM		-25 ÷ +70°C
Power supply wire section		0,5–2,5mm ²	
Power line diameter		≤13mm	
Communication wire diameter		≤7mm	
Through connection		Yes	
Surface wiring		Yes	

¹ Non-exchangeable, but serviveable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

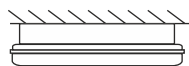
Housing material:
PC/ABS mixture

Lamp shade material:
Opal PC

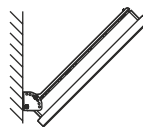
SYSTEMS

AT, CT, CB, CBAM, LVAM

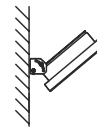
MOUNTING TYPES



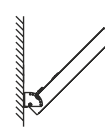
MOUNTING KITS



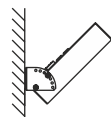
W121



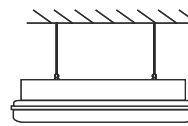
W122



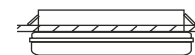
W221



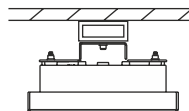
W222



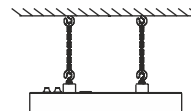
C101 + C200/C201



C105



C106



C114 + C200/C201

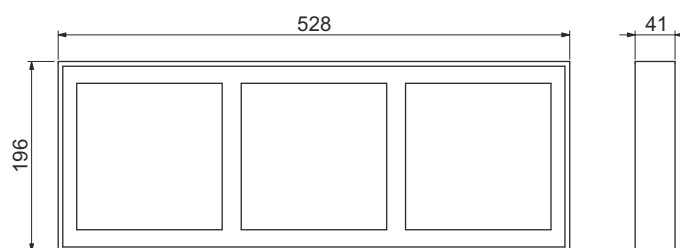
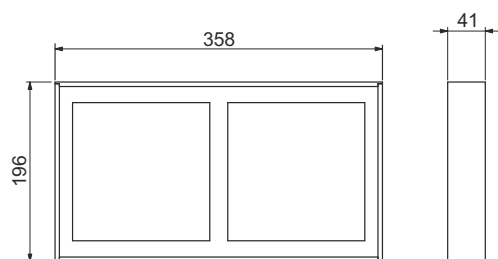
SPARK DYN LED

CE IP 40

30×15 
30 m

- LED modules indicating evacuation direction
- LED signalling the fixture operation status
- Battery anti-deep discharging protection
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- Many mounting variants
- Housing is made of aluminum, lamp shade of PMMA
- Mounting inside the building
- Available in many variants of housing size
- With a module-type design, one or two-sided

DIMENSIONS



TECHNICAL DATA

PARAMETER	VALUE
Power supply voltage	195-265VAC 50-60Hz
Power consumption: (2M; 3M; DS.)	<5W; <7W; <8W
Power coefficient	>0,5
Protection Class	I
IP rating	IP 40
Light source	LED Modules
Light source power	2-6W
Light source durability	> 50 000h
Battery type	Ni-MH HT; Ni-Cd HT
Battery voltage	6V; 7,2V; 8,4V
Battery charging time	< 24h
Emergency operation time	1h, 2h, 3h
Ambient temperature	+5°C ÷ +40°C
Communication network topology	CT-LOOP
Power supply connection	0,5 - 2,5 mm ²
Through connection	Yes

HOUSING

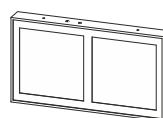
Housing material:
Powder-coated aluminium, steel
sheet front

Lamp shade material:
PMMA

SYSTEMS

CT, CB

MOUNTING KITS

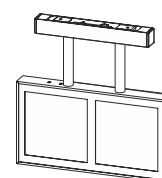


W1

Back to the wall

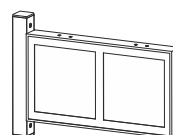
W34

Back to the wall;
cables introduced from the top



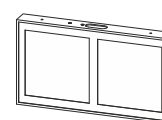
C29

On a rigid suspension



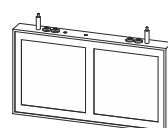
W16

Side to the wall (semaphore)



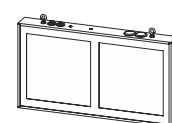
C27

Directly to the ceiling



C37

On a flexible suspension – cable lock



C41

On a flexible suspension – hooks

PRIMOS CLA LED

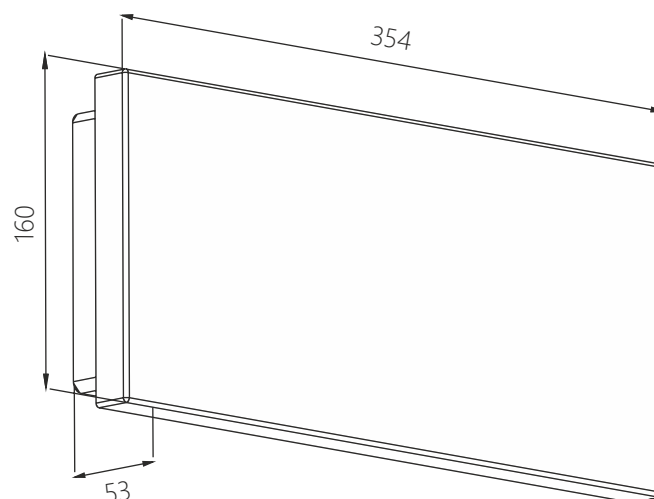


CE IP 65



- Battery anti-deep discharging protection
- Emergency operation (non-maintained), emergency-maintained or night (hotel)
- Possibility of connecting to the monitoring network system or collective power supply system
- Lighting of escape route, open spaces or fire protection points
- Plastic housing
- Three variants of fixture power (2W/5W/7W)
- Surface, on-wall, recessed and suspended mounting

DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE		
Power supply voltage	AT / CT	230V AC 50/60Hz		
	CB	230V AC 50/60Hz 80–275VDC		
	CBAM	230V AC 50/60Hz 170–275VDC		
	LVAM	10–32V DC		
Protection Class	AT/CT/CB/CBAM	I		
	LVAM	III		
IP rating		IP65		
Light source		LED Modules ¹		
Light temperature		5700K		
Light source power		2W, 5W, 7W		
	@Power LED	2W 5W 7W		
Min. luminous flux (lm)		200 300 360		
Light source durability		> 50 000h		
Battery type		Ni-Cd HU, Ni-MH HU		
Battery voltage		4,8V; 8,4V		
Battery capacity		1,0; 1,5; 1,6; 2,1; 2,5; 4,0Ah		
Battery charging time		< 24h		
Emergency operation time		1h, 3h		
	@Power LED	2W 5W, 7W		
Ambient temperature	AT / CT	TS	+5 ÷ +45°C	+5 ÷ +35°C
		TE	-20 ÷ +45°C	-20 ÷ +35°C
	CB / CBAM / LVAM	TS	-10 ÷ +55°C	-10 ÷ +45°C
		TE	-25÷ +60°C	-25 ÷ +50°C
Power supply wire section		0,5–2,5mm ²		
Power line diameter		≤13mm		
Communication wire diameter		≤7mm		
Through connection		Yes		
Surface wiring		Yes		

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

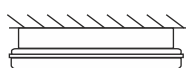
Housing material:
PC/ABS mixture

Lamp shade material:
opal PC

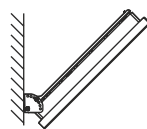
SYSTEMS

AT, CT, CB, CBAM, LVAM

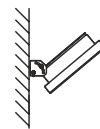
MOUNTING TYPES



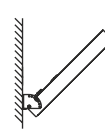
MOUNTING KITS



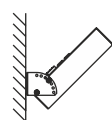
W121



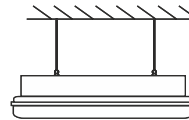
W122



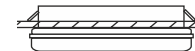
W221



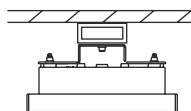
W222



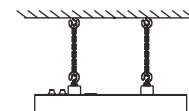
C101 + C200/C201



C105



C106

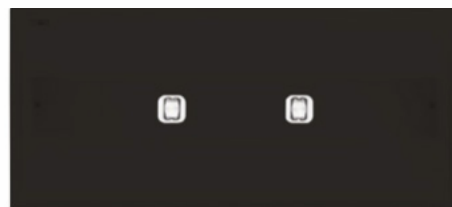


C114 + C200/C201

PRIMOS II LED



CE IP 65



black
RAL 9005

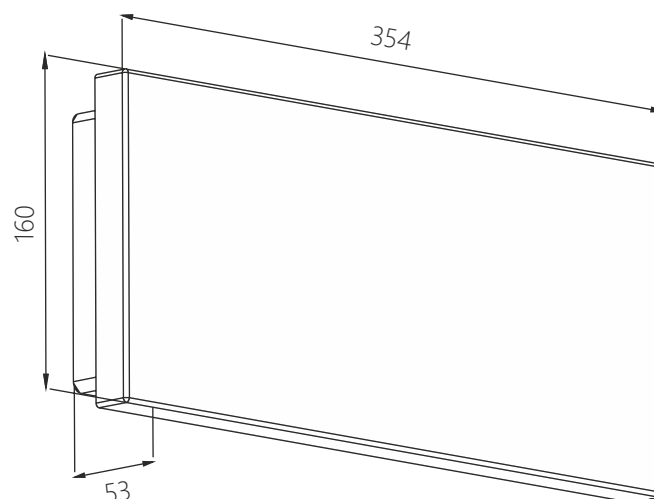


white
RAL 9016

- Emergency operation (non-maintained), emergency-network (maintained) or night (hotel)
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of evacuation route, open spaces or fire protection points
- Suitable for large heights
- Plastic housing
- Two variants of fixture power (5W/7W)
- Surface, on-wall, recessed and suspended mounting
- Wide choice of lens (road plus, area plus, area, RPHV)



DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE
Power supply voltage	AT / CT	230V AC 50/60Hz
	CB	230V AC 50/60Hz 80–275VDC
	CBAM	230V AC 50/60Hz 170–275VDC
	LVAM	10–32V DC
Protection Class	ST / CT / AT / CB / CBAM	II
	LVAM	III
IP rating		IP65
Light source		LED Modules ¹
Light temperature		5700K
Light source power		5W, 7W
Min. luminous flux (lm)	RO	553 647
	RP	547 640
	RP H/V	553 647
	AR	535 626
	AP	553 647
Light source durability		> 50 000h
Battery type		Ni-Cd HU, Ni-MH HU
Battery voltage		4,8V; 8,4V
Battery capacity		1,5; 1,6; 2,1; 2,5; 4,0Ah
Battery charging time		< 24h
Emergency operation time		1h, 3h
@moc LED		5W, 7W
Ambient temperature	ST / AT / CT	TS
		TE
	CB / CBAM /	TS
	LVAM	TE
Power supply wire section		0,5–2,5mm ²
Power line diameter		≤ 13mm
Communication wire diameter		≤ 7mm
Through connection		Yes
Surface wiring		Yes

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

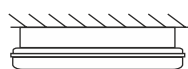
Housing material:
PC/ABS mixture

Lamp shade material:
PC

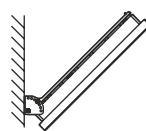
SYSTEMS

AT, CT, CB, CBAM, LVAM

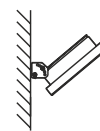
MOUNTING TYPES



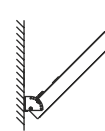
MOUNTING KITS



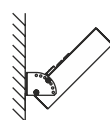
W121



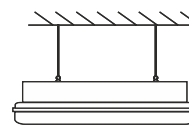
W122



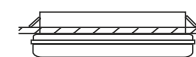
W221



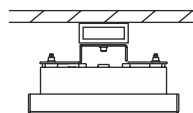
W222



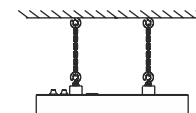
C101 + C200/C201



C105



C106



C114 + C200/C201

KWADRA FL / SU

flush / surface mounted



CE IP 20



SU
surface mounted



FL
flush



white
RAL 9003



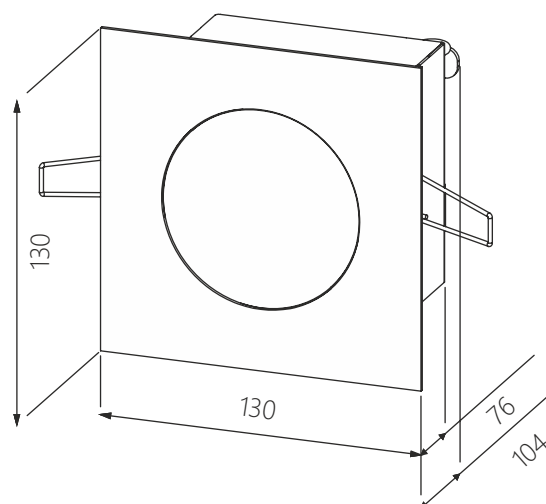
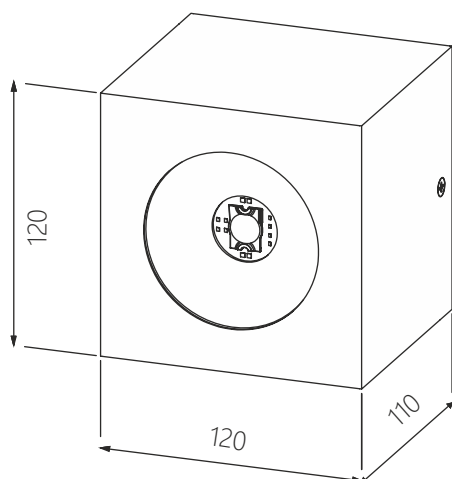
black
RAL 9005



grey
RAL 9006

- Battery anti-deep discharging protection
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape route, open spaces or fire protection points
- Made of steel
- Flush mounting (FL)
- Surface, on-wall, suspended mounting (SU)
- Wide choice of lens (road plus, side, area)

DIMENSIONS



TECHNICAL DATA

PARAMETER	VALUE
Power 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
Power consumption	<14VA
Protection Class	AT / CT / CB / CBAM I LVAM III
IP rating	SU: IP41, FL: IP20 / IP65
Light source	LED Modules ¹
Light temperature	5700K
Light source power	3W
Luminous flux	RP 325lm
	RO 321lm
	AR 282lm
	SD 321lm
Light source durability	> 50 000h
Battery type	Ni-MH HT
Battery voltage	4,8 V
Battery capacity	1,6Ah; 2,1Ah; 4,0Ah
Emergency operation time	1h, 3h
Ambient temperature	AT / CT +5 ÷ +35°C
	CB / CBAM TS -10 ÷ +35°C
	CB / CBAM TE -25 ÷ +40°C
	LVAM -25 ÷ +45°C
Power supply wire section	0,5–2,5mm ²

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

Housing material:
powder coated steel

Lamp shade material:
PMMA

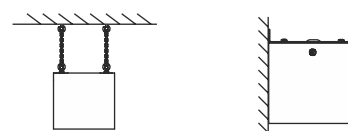
SYSTEMS

AT, CT, CB, CBAM, LVAM

MOUNTING TYPES



MOUNTING KITS



C102 + C200/C201

W131

OWA ALSU LED

surface mounted

OWA N14 LED



CE IP 65



white
RAL 9003

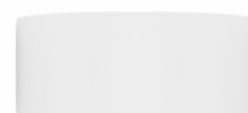


black
RAL 9005

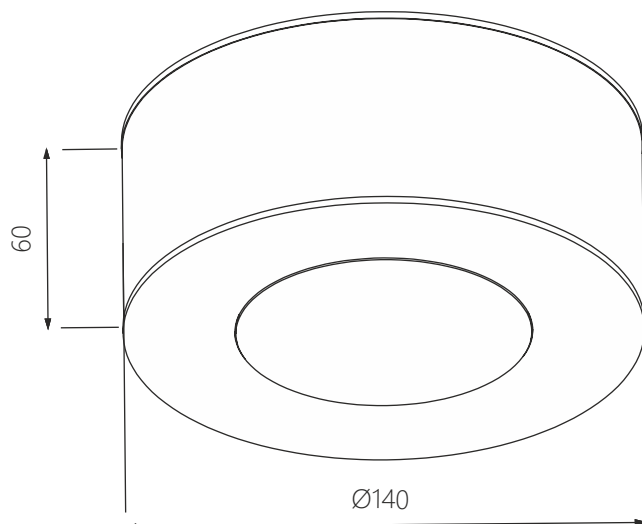


grey
RAL 9006

- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape route, open spaces or fire protection points
- Small housing
- Made of aluminium
- Surface mounting
- Wide choice of lens (road plus, side, area)



DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE
Power 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
IP rating		IP65
Light source		LED Modules ¹
Light temperature		5700K
Colour rendering index		70
Light source power		3W
Minimum luminous flux (lm)		RO: 321
		RP: 325
		AR: 282
		SD: 321
Light source durability		> 50 000h
Battery type		Ni-MH HU
Battery voltage		4,8V
Battery capacity		1,6Ah; 2,1Ah; 4,0Ah
Battery charging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature	AT / CT	TS +5 – +40°C
		TE -20 – +40°C
	CB / CBAM	TS -10 ÷ +40°C
		TE -25 ÷ +45°C
	LVAM	-25 ÷ +50°C
Power supply wire section		0,5–2,5mm ²
Power line diameter		≤8mm
Communication wire diameter		≤6mm
Through connection		No
Surface wiring		No

¹ Non-exchangeable, but serviveable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

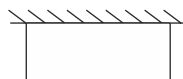
Housing material:
Powder-coated aluminium

Lamp shade material:
PMMA

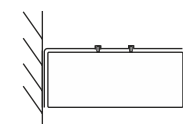
SYSTEMS

AT, CT, CB, CBAM, LVAM

MOUNTING TYPES



MOUNTING KITS



W135

OWA FL LED

flush mounted



CE IP 65/20



AREA PLUS



white
RAL 9016



black
RAL 9005



grey
RAL 7042

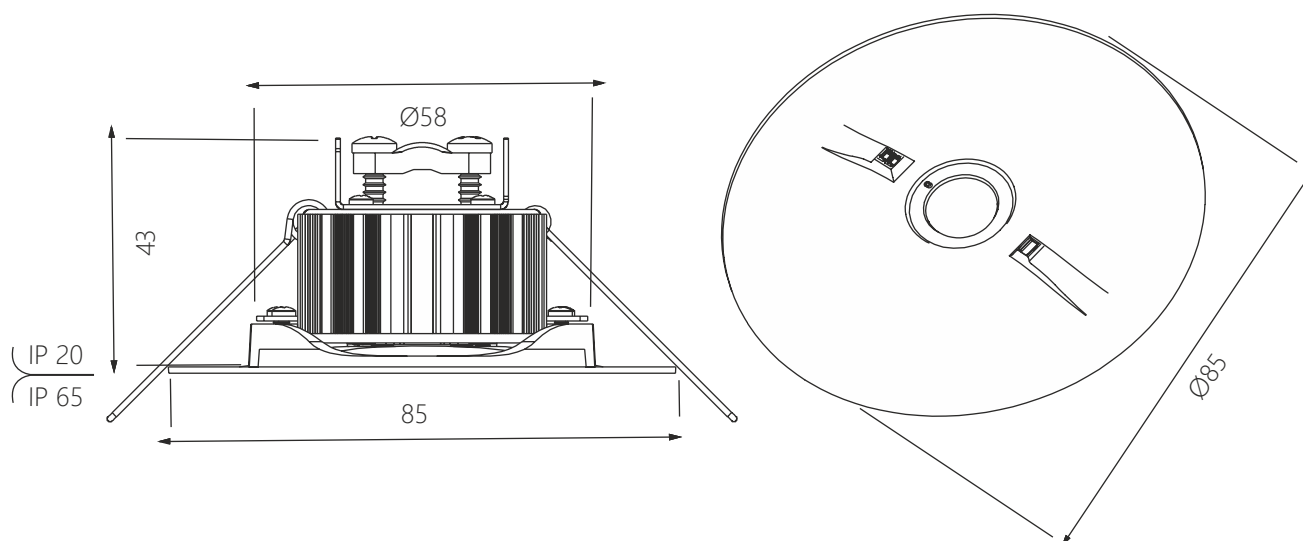


ROAD PLUS

- Battery anti-deep discharging protection
- Emergency operation (non-maintained), emergency-network (maintained) or night (hotel)
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape route, open spaces or fire protection points
- Small plastic housing
- Three variants of fixture power (1W/2W/3W)
- Flush mounting
- Wide choice of lens (road plus, area plus, area)
- With round (RND) and square (SQR) light source



DIMENSIONS



TECHNICAL DATA

PARAMETER	VALUE	
Power 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
Power coefficient		0,4–0,6
Protection Class	ST / AT / CT / CB / CBAM	I
	LVAM	III
IP rating		IP65 / IP20
Light source		LED Module ¹
Light temperature		5700K
Colour rendering index		70
Light source power		1W, 2W, 3W
Minimum luminous flux [lm]	@moc LED	1W 2W 3W
	RP	145 238 347
	AP	142 233 340
	AR	148 243 355
Light source durability		> 50 000h
Ambient temperature	@moc LED	1W 2W, 3W
	CB, CBAM	TS -10 ÷ +60°C -10 ÷ +55°C
		TE -25 ÷ +60°C -25 ÷ +55°C
	LVAM	TS -25 ÷ +60°C -25 ÷ +55°C
		TE -25 ÷ +60°C -25 ÷ +55°C
	ST, AT, CT	TS +5 ÷ +40°C
		TE -20 ÷ +40°C
Power supply wire section		0,5–2,5mm ²
Power line diameter		≤8mm
Through connection		Yes

¹ Non-exchangeable, but servicable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

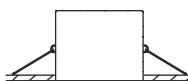
Housing material:
PC/ABS

Housing material of power
adapter:
steel

SYSTEMS

ST, AT, CT, CB, CBAM, LVAM

MOUNTING TYPES



MOUNTING KITS



C125

OWA SU LED

surface mounted



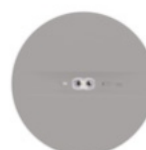
CE IP 65



white
RAL 9016

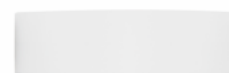


black
RAL 9005

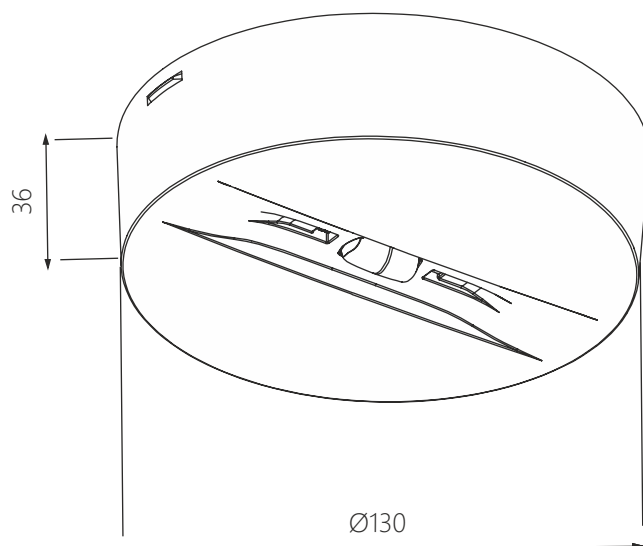


grey
RAL 7042

- Anti-deep discharging protection battery
- Emergency operation (non-maintained) or emergency-network (maintained)
- Possibility of connecting to the monitoring system or collective power supply
- Lighting of escape route, open spaces or fire protection points
- Small housing
- Plastic housing
- Three variants of fixture power (1W/2W/3W)
- Surface mounting
- Wide choice of lens (road plus, area plus, area)



DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE
Power supply voltage	ST/AT/CT	230V AC 50/60Hz
	CB/CBAM	230V AC 50/60Hz 170-275V DC
	LVAM	15-32V DC
Power coefficient		0,4-0,6
Protection Class	ST/AT/CT/CB/CBAM	I
	LVAM	III
IP rating		IP65
Mechanical strength	AP, AR	IK07
	RP	IK09
Light source		Moduly LED ¹
Light temperature		5700K
Colour rendering index		70
Light source power		1W, 2W, 3W
	@Power LED	1W 2W 3W
Luminous flux [lm]	RP	142 234 347
	AP	139 229 340
	AR	145 239 355
Light source durability		> 50 000h
Battery type		LiFePO4
Battery voltage		6,4V
Battery capacity		0,6Ah; 1,5Ah; 2,0Ah
Battery charging time	0,6Ah	<10h
	1,5Ah	<14h
	2,0Ah	<16h
Emergency operation time		1h, 2h, 3h
Ambient temperature	1W	+5 ÷ +45°C
	ST/AT/CT 2W	+5 ÷ +40°C
	3W	+5 ÷ +35°C
	@Power LED	1W, 2W 3W
	CB/CBAM TS	-10 ÷ +45°C -10 ÷ +40°C
	TE	-25 ÷ +55°C -25 ÷ +45°C
	LVAM	-25 ÷ +55°C -25 ÷ +45°C
Power supply wire section		0,5-2,5mm ²
Power line diameter		≤16mm
Communication wire diameter		≤7mm
Through connection		Yes
Surface wiring		No

¹ Non-exchangeable, but serviveable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

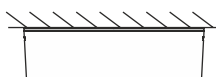
Housing material:

PC/ABS mixture

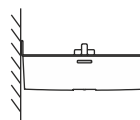
SYSTEMS

ST, AT, CT, CB, CBAM, LVAM

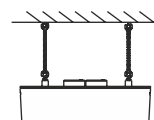
MOUNTING TYPES



MOUNTING KITS



W170



C116 + C220/C201

ORBIT SU LED

surface mounted



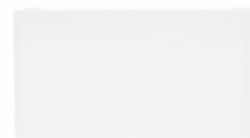
CE IP 54



grey
RAL 9006

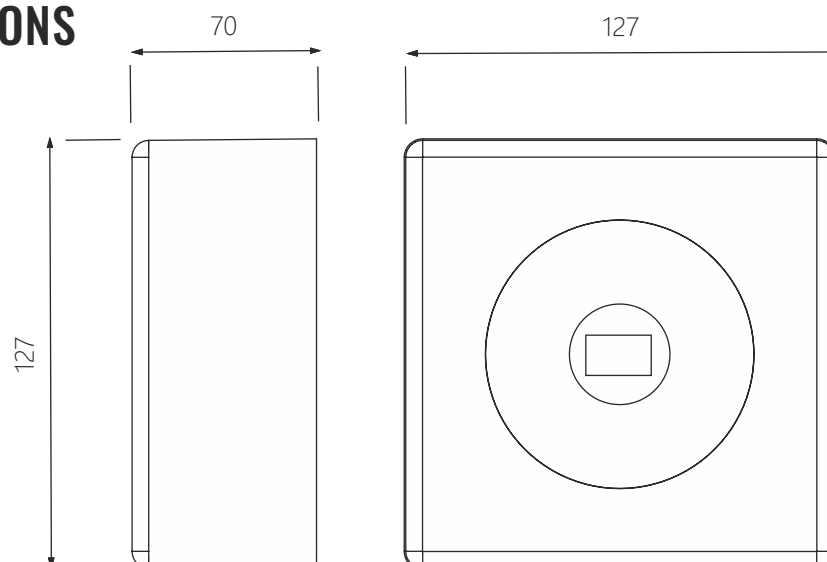


white
RAL 9003



- Anti-deep discharging protection battery
- Emergency operation (non-maintained)
- Possibility of connecting to the monitoring system or collective power supply system
- Lighting of escape route, open spaces or fire protection points
- Small housing
- Plastic housing
- Surface mounting
- Wide choice of lens (road plus, area, side)

DIMENSIONS



TECHNICAL DATA

PARAMETER		VALUE
Power supply voltage	ST/AT/CT	230V AC 50–60Hz
	CB	230V AC 50–60Hz 80V–275V DC
	CBAM	230V AC 50–60Hz 170V - 275V DC
	LVAM	6–32V DC
Protection Class	ST / AT / CT / CB / CBAM	I
	LVAM	III
IP rating		IP54
Light source		LED Module ¹
Light source power		2W, 3W
Min. luminous flux	RO, RP, SD	220 lm
	AR	190 lm
Light source durability		> 50 000h
Battery type		Ni-Cd HT; Ni-MH HT
Battery voltage		4,8V
Battery capacity		1,0Ah; 1,6Ah; 2,5Ah
Battery charging time		< 24h
Emergency operation time		1h, 3h
Ambient temperature		+5 ÷ +40°C
Power supply wire section		0,5–2,5mm ²

¹ Non-exchangeable, but serviceable light source

TS - standard temperature range, TE - extended temperature range

HOUSING

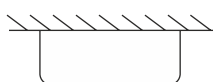
Housing material:
polycarbonate

Lamp shade material:
PMMA

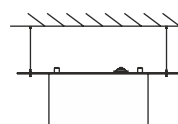
SYSTEMS

ST, AT, CT, CB, LVAM

MOUNTING TYPES



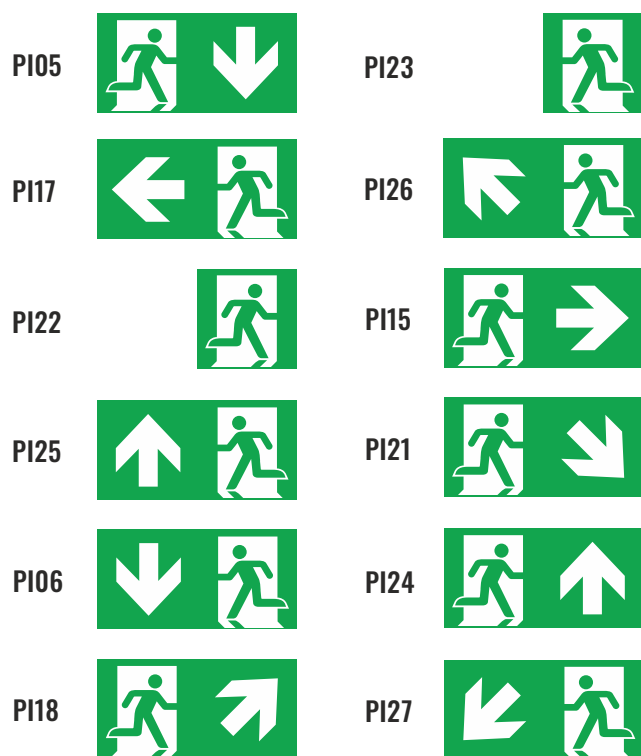
MOUNTING KITS



C108

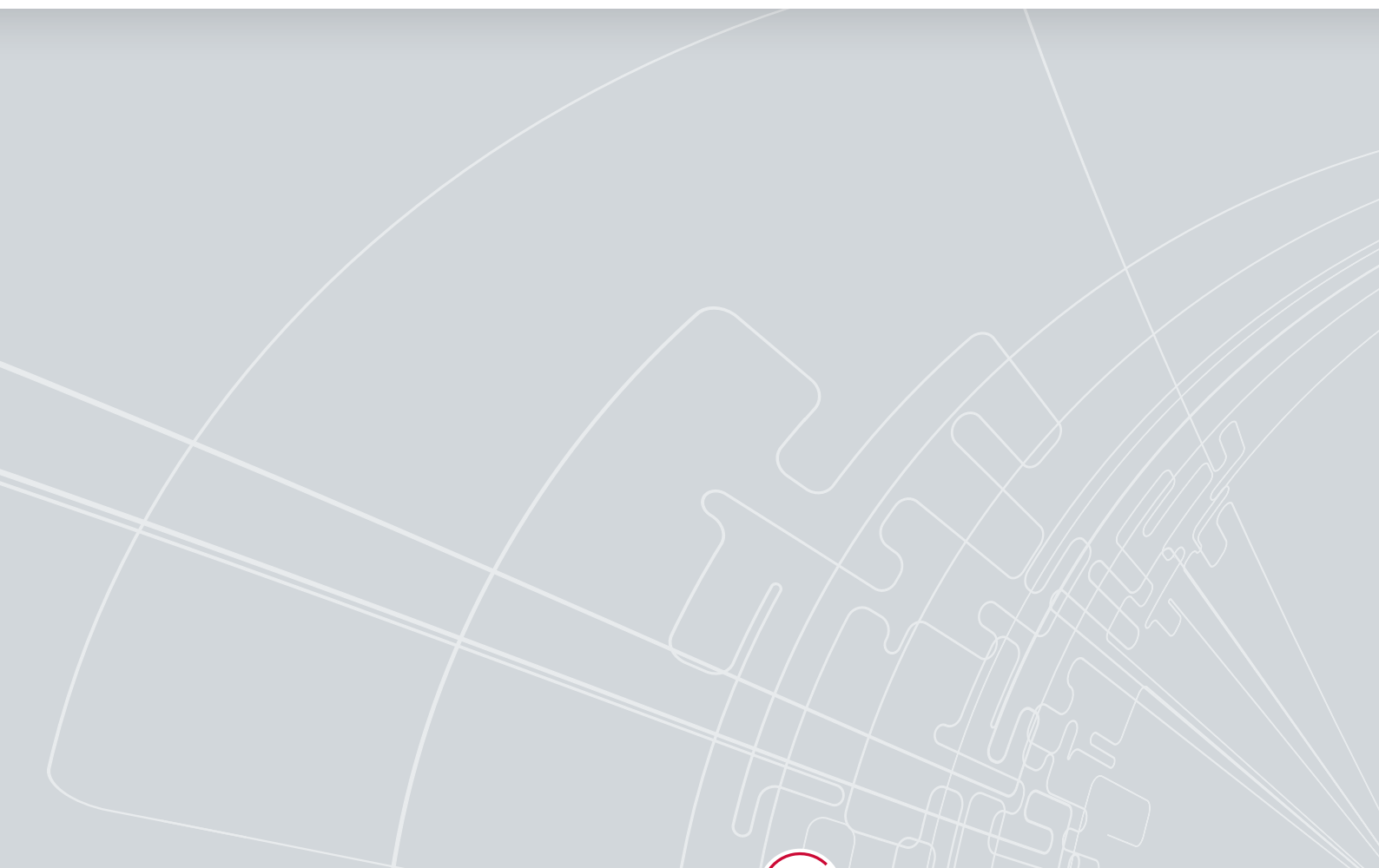


W132



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