

6 SicuroLED-G - advantages

For emergency lightings with external supply escape routes, areas with particular panic hazard, workplaces with particular people hazard and safety devices can be illuminated optionally with separate emergency luminaires or combined general and emergency luminaires.

An optimal integration of the emergency lighting in the lighting concept and interior architecture of a building is the advantage of combined general and emergency luminaires. Therefore those are preferred by building contractors and lighting designers.

In both variants of luminaires can be used conventional lamps or LED lamps.

The major disadvantages of luminaires with conventional lamps are:

- small luminance efficiency
- separate emergency luminaires with not optimized light distribution
- combined general and emergency luminaires with non-reduced power input in battery operation

For that there are larger battery capacities and charger devices necessary to supply the emergency lighting as well as more circuits and luminaires for the emergency lighting.

These disadvantages can be eliminate by using separate emergency luminaires with LED lamps or reduced by using combined general and emergency luminaires with LED lamps. For a full elimination of the disadvantages there are combined general and emergency luminaires with a reduction of the power input in battery operation.

By using luminaires with LED lamps it is possible to change from one centralized power supply system for a building to one decentralized power supply system for each fire area. The differences between both systems are:

- Centralized power supply system with 216V battery, charger device, switching device and luminaire circuits in protection class I with main

and sub distributors.

- Decentralized power supply system with 24V battery, charger device, switching device and luminaire circuits in protection class III without main and sub distributors.

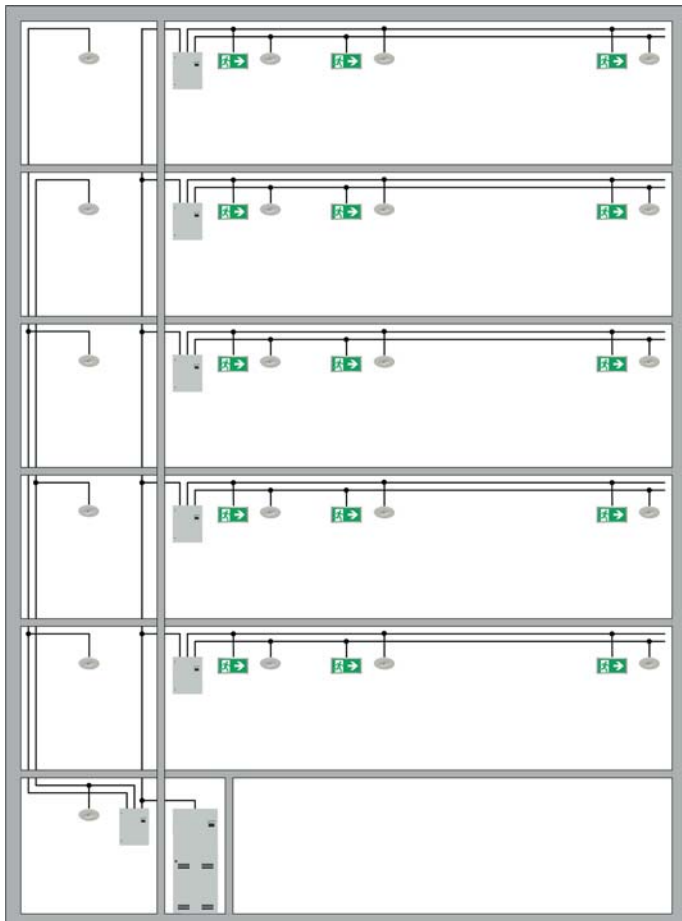
The realization of such an emergency lighting concept is the SicuroLED-G system with:

- Decentralized power supply with battery , charger device, switching device and luminaire circuits
- Exit sign luminaires with LED lamps and SicuroLED module
- Separate emergency luminaires with LED lamps and SicuroLED module
- Combined general and emergency luminaires with LED lamps and SicuroLED inverter for
- mains supply with nominal luminaire power and battery supply with reduced luminaire power.

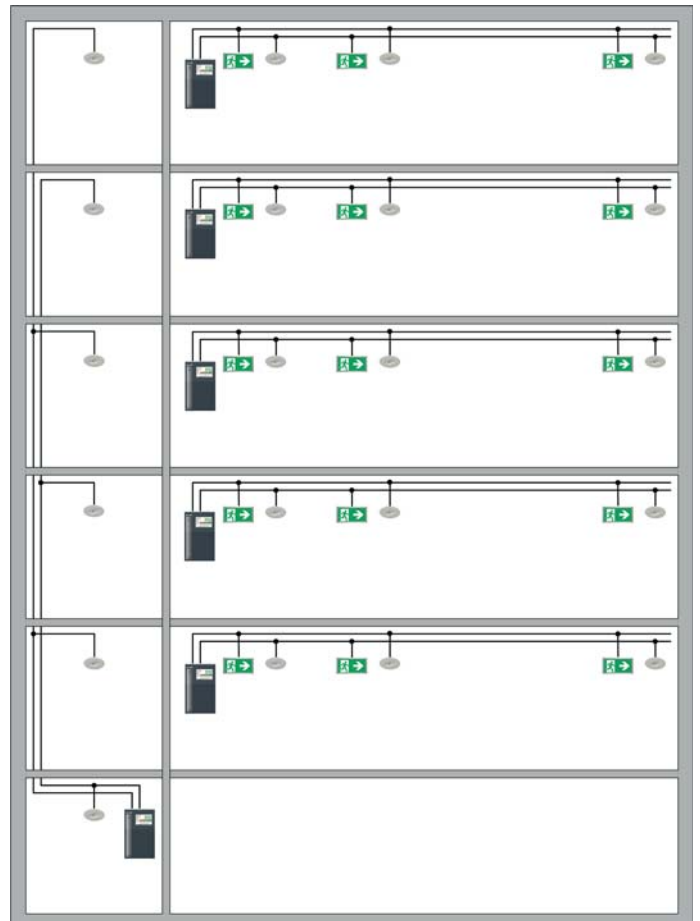
The advantages of SicuroLED-G are:

- Smaller battery capacity and charger decices by the better luminance efficiency of luminaires with LED lamps.
- Smaller battery capacity and charger devices by using separate emergency luminaires with optimized light distribution
- Smaller battery capacity and charger devices by using combined general and emergency luminaires with reduced power input in battery operation
- Smaller quantity of luminaires and circuits
- No battery room required
- No main and sub distributors as well as cable required
- No fire protection for the main and sub distributors as well as the cable required
- Less luminaires to mount and to install
- Less cable to run
- Increased safety of decentralized power supply
- Free choice by the building contractor or lighting designer between separate or combined general and emergency luminaires under economic and architectonic

Variation with centralised supply system










Variation with decentralised supply system










The difference between emergency luminaires with conventional lamps and LED lamps is displayed using the example of the lighting of 40 escape routes with 30 m length and 2 m width at a mounting height of 3 m in a building. The comparison is based on the use of separate or combined emergency luminaires or combined general and emergency luminaires. Regarding the combined general and emergency luminaires 10 escape routes with semicircular luminaires, downlights, louvre luminaires and damp and waterproof luminaires should be illuminated in each case.

Variation with conventional lamps and 1 centralised supply system with 216 V battery

Luminaire		 T5 8W	 TC-L 18W	 TC-DEL 26W	 T5 14W	 T8 58W
Luminaire distance		4.3 m	6.6 m	6.7 m	4.1 m	9.2 m
		11.2 m	16.8 m	14.6 m	9.0 m	19.7 m
Luminaire power		7.8 W	19 W	27 W	16 W	55 W
Example escape route						
Luminaire quantity		3	3	3	4	2
Luminaire power		23.4 W	57 W	81 W	64 W	110 W
Example building						
Luminaire quantity		120	30	30	40	20
Luminaire power		936 W	570 W	810 W	640 W	1.100 W
Battery power		936 W	3.120 W			
Battery capacity	Duration 1 h	18x12Ah	18x28 Ah			
	Duration 3 h	18x28 Ah	18x70 Ah			

Variation with LED lamps and 10 decentralised supply systems with 24 V battery

Luminaire		 LED 2.5W	 LED 13W	 LED 16W	 LED 28W	 LED 32W
Luminaire distance		8.7 m	3.6 m	4.6 m	4.1 m	5.2 m
		17.3 m	9.6 m	11.3 m	9.8 m	11.5 m
Luminaire power		3.8 W	8 W	8 W	8 W	8 W
Example escape route						
Luminaire quantity		2	4	3	4	3
Luminaire power		7.6 W	32 W	24 W	32 W	24 W
Example building						
Luminaire quantity		80	40	30	40	30
Luminaire power		304 W	320 W	240 W	320 W	240 W
Battery power		304 W	1120 W			
Battery capacity	Duration 1 h	10 x 12Ah	10 x 12Ah			
	Duration 3 h	10 x 12Ah	10 x 24Ah			

8 SicuroLED-G - decentralised supply system

Supply of exit sign and emergency luminaires with SicuroLED modul and combined general and emergency luminaires with SicuroLED inverter in one fire area:

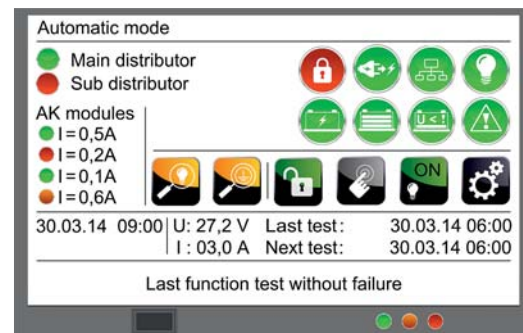


Control and monitoring device with:

- automatic testing device according for execution of function and duration tests as well as storage the test results
- dynamic light control for dynamic safety guidance to change the identification and illumination of escapes routes dependent on a particular risk

Luminaire circuit devices with:

- 4 luminaire circuits in protection class III for operation of maximal 20 luminaires per circuit
- Combined maintained, non-maintained and switchable operation of luminaires in a circuit
- Selective switching (ON/OFF) and dimming (10% and 100%) in main operation
- Selective switching from main into battery operation and from battery into main operation
- Selective switching (ON/OFF) in battery operation
- Free allocation of each luminaire to the 3 operation mode and the 64 control groups
- Selective monitoring of the luminaires (LED converter)
- Automatic addressing of the luminaires



In- and outputs

- 4 control inputs, freely programmable, for switching of luminaires
- 1 control input, pre-programmed
- 1 control input, freely programmable
- 3 message output, pre-programmed
- 3 message output, freely programmable

Interfaces:

- RS485 interface for the communication to a computer with optional software Sicuro-Visual by a network, connection to a building management system by Modbus or as WEB server for Sicuro-Visual
- USB interface for upload the system configuration, download of the test protocols and software updates for the Decentralized supply system SicuroLED-G and the SicuroLED modules respectively the SicuroLED-Inverter in the luminaires

Separate control and monitoring device, charger device, power device and luminaire circuit device, individual changeable.

Operation via colored 7" touch screen with graphical and alpha-numeric interface, activateable password protection, multilingual



SicuroLED-G - advantages of the luminaires

Exit sign and emergency luminaires



Exit sign and emergency luminaires with integrated SicuroLED module with automatic addressing for monitoring of the luminaire and programming of the operation mode.



Special versions for recessed or surface mounting in fire walls / fire ceilings with the fire resistance class F30 resp. F90.



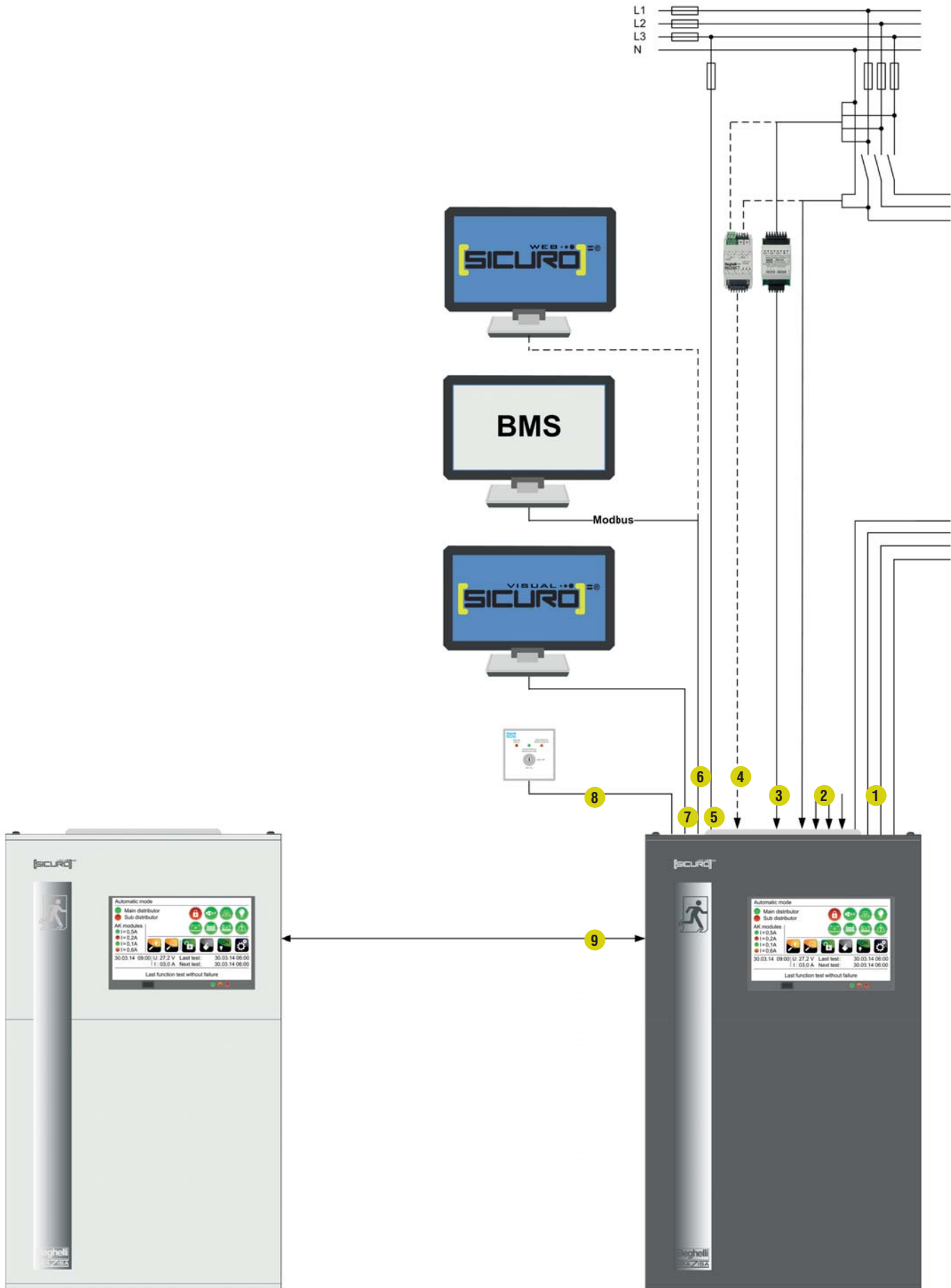
Combined general and emergency luminaires

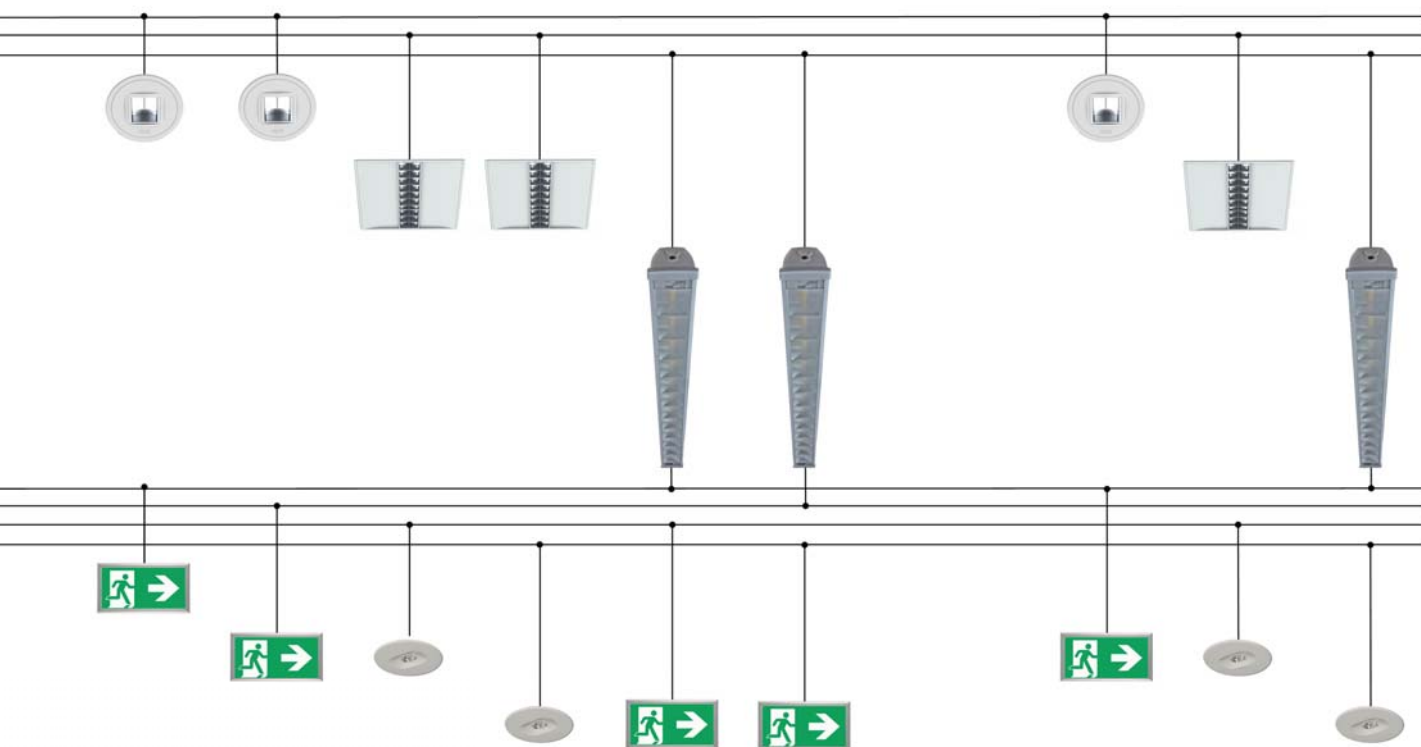


Combined general and emergency luminaires with integrated SicuroLED inverter with automatic addressing for monitoring of the luminaire and automatic reduction of the luminous flux in battery operation.



10 SicuroLED-G system





1	4 luminaire circuits for each 20 exit sign / emergency luminaires with SiruroLED modul	Cable: see table below
2	4 control inputs for light switch query	Cable: min. 2 x 0.5 mm ² per input
3	1 control input for optional, external mains monitoring modules	Cable: min. 2 x 0.5 mm ²
4	RS485 interface for optional, external light switch query-modules	Cable: min. 2 x 2 x 0.28 mm ² , screened
5	Mains supply	Cable: min. 3 x 1.5 mm ²
6	Ethernet interface for optional Modbus or computer with WEB	Cable: RJ45
7	RS485 interface for optional, external computer with Sicuro-Visual	Cable: min. 2 x 2 x 0.28 mm ² , screened
8	Switch inputs / message outputs for optional, external message and switch module	Cable: 10 x 0.5 mm ²
9	Interface for Siruro communication bus	Cable: min. 2 x 2 x 0.28 mm ² , screened

	Connected load	Cable		Cable		Cable	
		Cross section	Length	Cross section	Length	Cross section	Length
1	24W (24V / 1A)	1.5 mm ²	147 m	2.5 mm ²	245 m	4.0 mm ²	390 m
	48W (24V / 2A)	1.5 mm ²	74 m	2.5 mm ²	123 m	4.0 mm ²	195 m
	72W (24V / 3A)	1.5 mm ²	49 m	2.5 mm ²	82 m	4.0 mm ²	130 m

Table of cable dimensioning



SiruroLED-G

Decentralised supply system

Decentralized supply for operation of exit sign and emergency luminaires with SicuroLED modul and combined general and emergency luminaires with SicuroLED inverter in one fire area.

Control and monitoring device with:

- automatic testing device according EN 62034 for execution of function and duration tests as well as storage the test results
- dynamic light control for dynamic safety guidance to change the identification and illumination of escapes routes dependent on a particular risk

Luminaire circuit devices with:

- 4 luminaire circuits in protection class III for operation of maximal 20 luminaires per circuit
- Combined maintained, non-maintained and switchable operation of luminaires in a circuit
- Selective switching (ON/OFF) and dimming (10% and 100%) in main operation
- Selective switching from main into battery operation and from battery into main operation
- Selective switching (ON/OFF) in battery operation
- Free allocation of each luminaire to the 3 operation mode and the 64 control groups
- Selective monitoring of the luminaires (LED converter)
- Automatic addressing of the luminaires
- Output per circuit: 72W
- Voltage/current per circuit: 24V / 3A

In- and outputs

- 4 control inputs, freely programmable, for switching of luminaires, control signal: 230 V AC
- 1 control input, pre-programmed, for switching the maintained operation (ON/OFF), control signal: potential-free contact
- 1 control input, freely programmable, for switching of operation state/function test (START)/duration test (START)/non-maintained operation (OFF)/deep discharge protection (confirmation), control signal: potential-free contact
- 3 message output, pre-programmed, for indication of collective failure/operation state/operation mode, message signal: potential-free contact
- 3 message output, freely programmable, for indication the status of charging/battery/circuit/luminaires/operation state/main operation/battery operation/test operation/deep discharge, message signal: potential-free contact

Interfaces:

- RS485 interface for the communication to a computer with optional software Sicuro-Visual by a network, connection to a building management system by Modbus or as WEB server for Sicuro-Visual
- USB interface for upload the system configuration, download of the test protocols and software updates for the Decentralized supply system SicuroLED and the SicuroLED modules respectively the SicuroLED-Inverter in the luminaires

Charging device 27.2 V / 3 A, 27.2 V / 5A, 27.2 V / 10 A

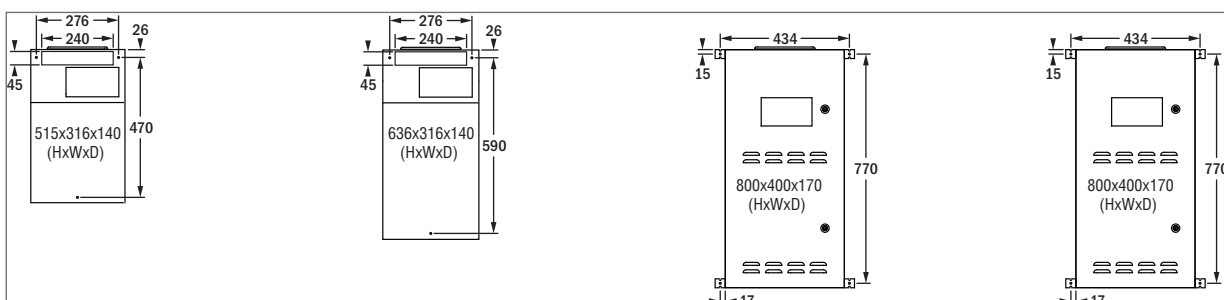
Battery: Pb battery in sealed version, design OGiV, with a life expectancy of 10 years at an ambient temperature of 20 °C







Operation via colored 7"-touch-screen with graphical and alpha-numeric interface for in and output of parameters and data, activatable password protection, multilingual colored, and state LED for mains operation/battery operation/collective failure.

Assembly in cabinet with separated electronic and battery part.

Technical data

Mounting:	surface wall mounting
Cabinet:	sheet steel
Colour 12 Ah / 24 Ah:	white (RAL 9003) or grey (RAL 7016)
Colour 28 Ah / 56 Ah:	grey (RAL 7035)
Degree of protection:	IP20
Protection class:	I
Ambient temperature:	
Electronic part:	- 5 °C to + 25 °C
Battery part:	20 °C
Mains supply:	1 ~ N PE 50 Hz
	U : 230 V +/- 10 %



					
Type		SicuroLED-G 12	SicuroLED-G 24	SicuroLED-G 28	SicuroLED-G 56
Order code		17060	2417061	17062	17063
					
Type		SicuroLED-G 12	SicuroLED-G 24		
Order code		17070	17071		
Battery capacity		12 Ah	24 Ah	28 Ah	56 Ah
Battery voltage		24 V	24 V	24 V	24 V
Battery current	1 h	6.1 A	12.0 A	12.0 A	12.0 A
	3 h	2.2 A	5.1 A	7.0 A	12.0 A
	8 h	0.6 A	1.9 A	2.75 A	6.16 A
Battery power	1 h	147.2 W	288.0 W	288.0 W	288.0 W
	3 h	53.6 W	123.2 W	170.0 W	288.0 W
	8 h	15.2 W	46.4 W	66.0 W	148.0 W
Charging device		27.2 V / 3.0 A	27.2 V / 5.0 A	27.2 V / 10.0 A	27.2 V / 10.0 A
Luminaire circuits	Quantity	4	4	4	4
	Voltage	24 V +/-20%	24 V +/-20%	24 V +/-20%	24 V +/-20%
	Current	max. 3 A	max. 3 A	max. 3 A	max. 3 A
	Power	max. 72 W	max. 72 W	max. 72 W	max. 72 W
Light switch query		4	4	4	4
Cable entry	from above	Plate with membranes			
	from below	Opening with predisposition			
Cable terminals	Mains	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
	Battery	4.0 mm ²	4.0 mm ²	6.0 mm ²	6.0 mm ²
	Luminaires	2.5 mm ²	2.5 mm ²	2.5 mm ² ¹⁾	2.5 mm ² ¹⁾
	Control inputs	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
	Control outputs	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
	Message outputs	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
	Ethernet interface	RJ45 connector	RJ45 connector	RJ45 connector	RJ45 connector
Dissipation power	Mains operation	24 W	26 W	28 W	30 W
	Batt. operation	15 W	15 W	15 W	15 W
Dimensions (HxWxD)		516x316x140 mm	644x316x140 mm	800x400x170 mm	800x400x170 mm
Total weight		20.0 kg	30.0 kg	39.0 kg	56.0 kg

Optional system components

Mains monitoring module DS 1 UV / DS 3 UV



Module for mains monitoring of the general lighting inside sub distributions. Activation of the control output during mains disturbances and mains failures with $U < 0.6 U_{Nom}$ for 0.5 s.

Mains input: 3-phase
Control output: 2 changeover contacts, potential-free (230 V / 3 A)

Technical data

Mains input:	1~ N 230 V / 50 Hz	Mains input:	3~ N 400 V / 50 Hz
Control output:	2 changeover contacts, potential-free, 230 V / 3 A	Control output:	2 changeover contacts, potential-free, 230 V / 3 A
Mounting:	in distribution (DIN rail)	Mounting:	in distribution (DIN rail)
Housing:	plastic	Housing:	plastic
Dimensions (HxWxD):	90x52x58 mm	Dimensions (HxWxD):	90x52x58 mm
Degree of protection:	IP 20	Degree of protection:	IP 20

Type: DS 1 UV
Order code: G31574

Type: DS 3 UV
Order code: G31026



Mains monitoring and light switch query module LSSA 3+5

Module with 3 control inputs for monitoring the mains of the general lighting or query of the light switches of the general lighting and 5 control inputs for query of the light switches of the general lighting. Activation of the control inputs for mains monitoring at $U > 0.6 U_{Nom}$ for 0.5 s. Activation of the control inputs for light switch query at 230 V AC. invertible. Function and logic of the control inputs as well as assignment to luminaire circuits or luminaires. including free input of text designations. programmable on the decentralised supply system. Connection to the decentralised supply system by a 4-wire cable for bus and supply voltage.

Technical data

Control inputs for mains monitoring:	3 or 0
Control inputs for light switch query:	5 or 8
Control signal:	1~ N 230 V / 50 Hz
Communication bus:	RS 485
Mounting:	in distribution (DIN rail)
Housing:	plastic
Dimensions (HxWxD):	110x53x63 mm
Degree of protection:	IP 20
Protection class:	I

Type: LSSA 3+5
Order code: G31585



Light switch query module LSSA 8

Module with 8 control inputs for query of the light switches of the general lighting. Activation of the control inputs for light switch query by switch contacts (potential-free). Logic of the control inputs as well as assignment to luminaire circuits or luminaires. including free input of text designations. programmable on the decentralised supply system. Connection to the decentralised supply system by a 4-wire cable for bus and supply voltage.

Technical data

Control inputs for light switch query:	8
Control signal:	switch contact (potential-free)
Communication bus:	RS 485
Mounting:	in distribution (DIN rail)
Housing:	plastic
Dimensions (HxWxD):	110x53x63 mm
Degree of protection:	IP 20
Protection class:	I

Type: LSSA 8
Order code: G31586



Message and switch module MSM-A

Message (optical) of:

- Operational condition
 - Battery operation
 - Collective fault
- Switching (key switch) of:
- Maintained mode ON/OFF

Technical data

Mounting:	surface wall mounting
Housing:	plastic
Dimensions (HxWxD):	160x80x60 mm
Degree of protection:	IP 65
Protection class:	III

Type: MSM-A
Order code: G31015



Message and switch module MSM-E

Message (optical) of:

- Operational condition
 - Battery operation
 - Collective fault
- Switching (key switch) of:
- Maintained mode ON/OFF

Technical data

Mounting:	recessed wall mounting
Housing:	plastic / metal
Dimensions (HxWxD):	86x86x53 mm
Degree of protection:	IP 20
Protection class:	III

Type: MSM-E
Order code: G31045



Sicuro Visual

Software for a centralized in- and output of system data respectively control and monitoring parameters.

Programming functions:

- import of layout plans
- textual and graphical assignment of all supply systems, circuits and luminaires in plans and lists
- configuration of the supply system, circuits and luminaires

Monitoring functions:

- automatic or manual test of supply systems, circuits and luminaires
- message of the status of supply systems, circuits and luminaires, failures and tests

Control functions:

- automatic or manual switching/dimming of supply systems, circuits and luminaires

Type: Sicuro Visual
Order code: SWB16313



Sicuro WEB / Sicuro MOD

Software extension for a centralized monitoring of the emergency lighting via intranet/internet or Modbus with the following function:

Monitoring functions:

- Output of the allocation of all supply systems, circuits and luminaires, operation mode per circuit or luminaires and the state of all internal or external light switch query-modules per supply system

Testing function:

- In- and output of testing parameters per supply system
- automatic or manual function or duration test per supply system

Control functions:

- manual switching switching of operation state

Message function:

- Output of the status of supply systems and failures in online mode per supply system, circuits and luminaires

Type: Sicuro WEB
Order code: SWB16314

Type: Sicuro MOD
Order code: SWB16316