



viaFlex

The emergency lighting concept for  
all occasions.

**KAUFEL**

Power and productivity  
for a better world™



# Emergency lighting systems – Flexible and user-friendly



viaFlex is a flexible emergency lighting concept. The central battery system viaFlex offers maximum structural flexibility, both centrally and locally, depending on the building structure and conditions. The innovative and intuitive operating concept facilitates commissioning and operation.

Almost all applications can be realised with viaFlex. The solution consists of a just few standardised components with specially designed hardware and software elements. The central configuration of the viaFlex substation serves to save costs, as it does without E30 installation material and facilitates distribution with functional integrity.

viaFlex is ideally adapted to the structuring of a building into fire compartments. It allows for the emergency power supply to be planned, installed and commissioned by fire compartment.

## Your benefits

- maximum flexibility in network design, centrally located in the building, and decentralised in the fire compartment
- standardised, time-saving planning according to fire compartments
- savings in E30 installation material and even emergency lighting without E30
- quick installation as no adjustments need to be made to the lamp module
- intuitive operational concept for time-saving commissioning and partial commissioning
- flexibility through simple expansion options
- convenient Plug&Play visualisation with viaFlex senso



## viaFlex US

### The substation module with second feed-in

The intelligent substations are preferably decentrally positioned in fire compartments and operate autonomously. viaFlex US takes all necessary safety-related decisions. They immediately switch on the emergency and escape sign luminaires in their section in case of disruption or power failure. They also store all luminaire data in order to forward them to headquarters. The choice of location for the distributor housing with viaFlex US is flexible because no electrical equipment room is necessary in the fire compartment.

In particular, the patented second feed-in and the change-over facility of the viaFlex US differentiate it from other systems. They are what makes the many diverse possible applications of the viaFlex concept possible, and they additionally increase the luminaires' safety and supply reliability.

## viaFlex CPS

### The variable component

The centre of the system is adapted to the corresponding solution, either as viaFlex CPS with or without built-in battery or as a small control and data storage unit via viaFlex SV. In both cases, all relevant system parameters are recorded in the central control unit and processed to display them on the integrated viaFlex Touch control unit or, optionally, an external PC. All configuration parameters are stored in a non-volatile memory.

## viaFlex FLX

### The luminaire module with no settings

The compact viaFlex FLX lamp modules control the emergency and escape sign luminaires. They use the luminaire's existing supply line, i.e. without a separate data line, to continually exchange information with their viaFlex US, to which they report the state of the luminaire and the power supply. The system thus detects any deviation immediately and can respond instantly to faults.

All modules and luminaires are marked with a bar code. Thus, the addresses of the luminaries can be clearly localised. Upon initial commissioning, the substations automatically detect all lamp components and register them on the system. General commercial DC-capable luminaires can be integrated through FLX to illuminate escape routes.

The lamp module enables mixed operation of all luminaires in the circuit, an input circuit to operate the luminaire with the general lighting, as well as a separate grid monitoring input for each luminaire, and standard individual light monitoring. A luminaire operating hour counter provides information on the age of the luminaire at all times and includes an preventative failure alarm function.

# viaFlex

## Advantages of the classical concept



In contrast to centralised systems, the classic decentralised viaFlex concept reduces the number of circuits required in the building whilst maintaining E30 functionality. This reduces installation costs and efforts and provides extra space in the cable duct and the cable route – both for the version with individual outgoing circuits and for supply through a shared strand.

Supply through a shared strand is an advantage. The small E30 distributor necessary for this purpose is housed directly in the respective fire compartment and makes it possible to reduce the circuits required in the building to just one line. This type of supply should therefore be used in the building as extensively as possible.

Some fire compartments near the viaFlex CPS central control unit are usually powered by individual outgoing circuits from the CPS, which results in a combination of strands and individual outgoing circuits.

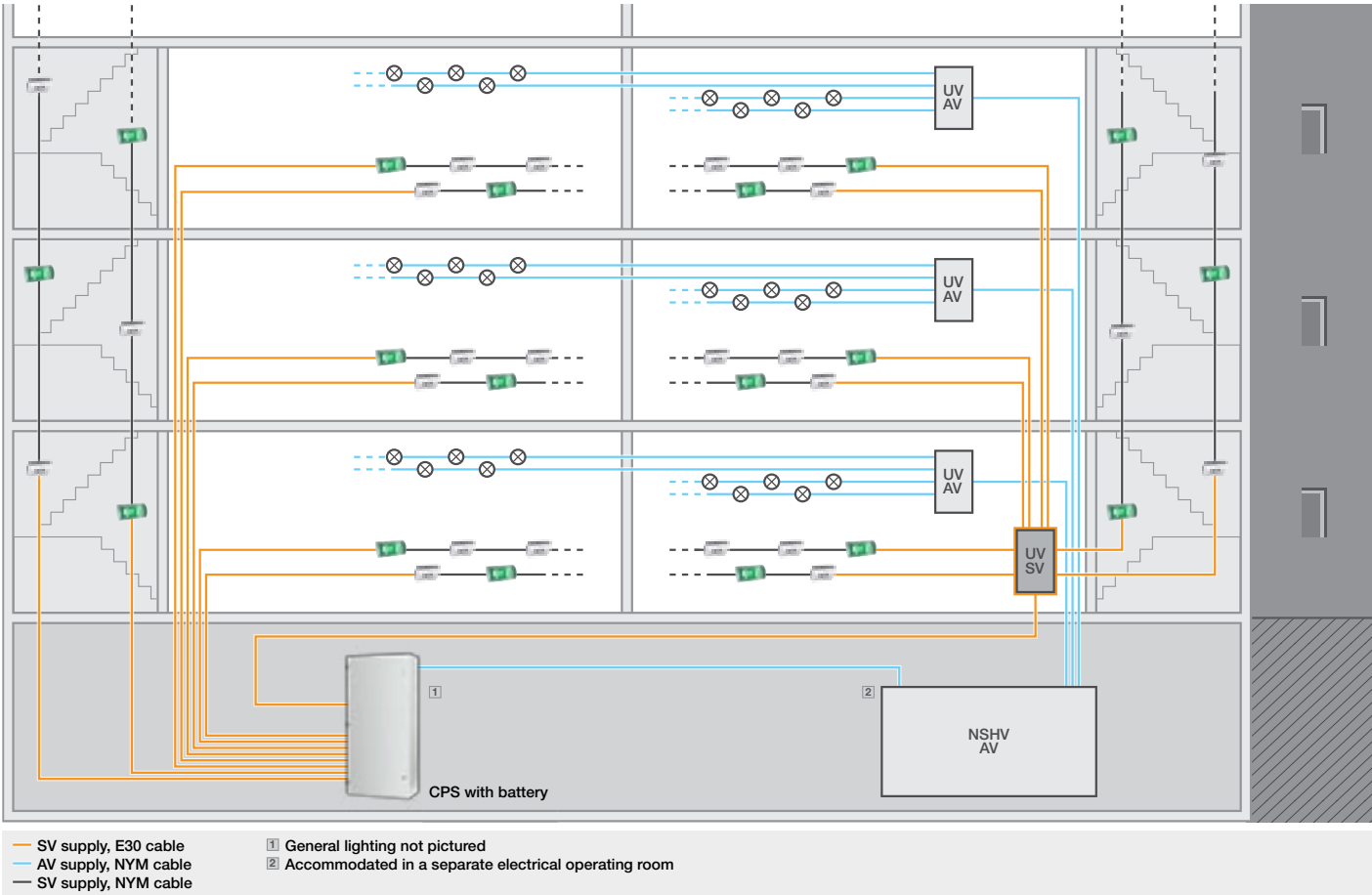
For future-proof dimensioning of the strand line cross section, the viaFlex system can be easily expanded by additional final circuits, by adding viaFlex US and small E30 distributors.

In addition, outgoing strands are perfect for gradual commissioning by fire compartments. The extremely reduced wiring with viaFlex facilitates work on existing projects.

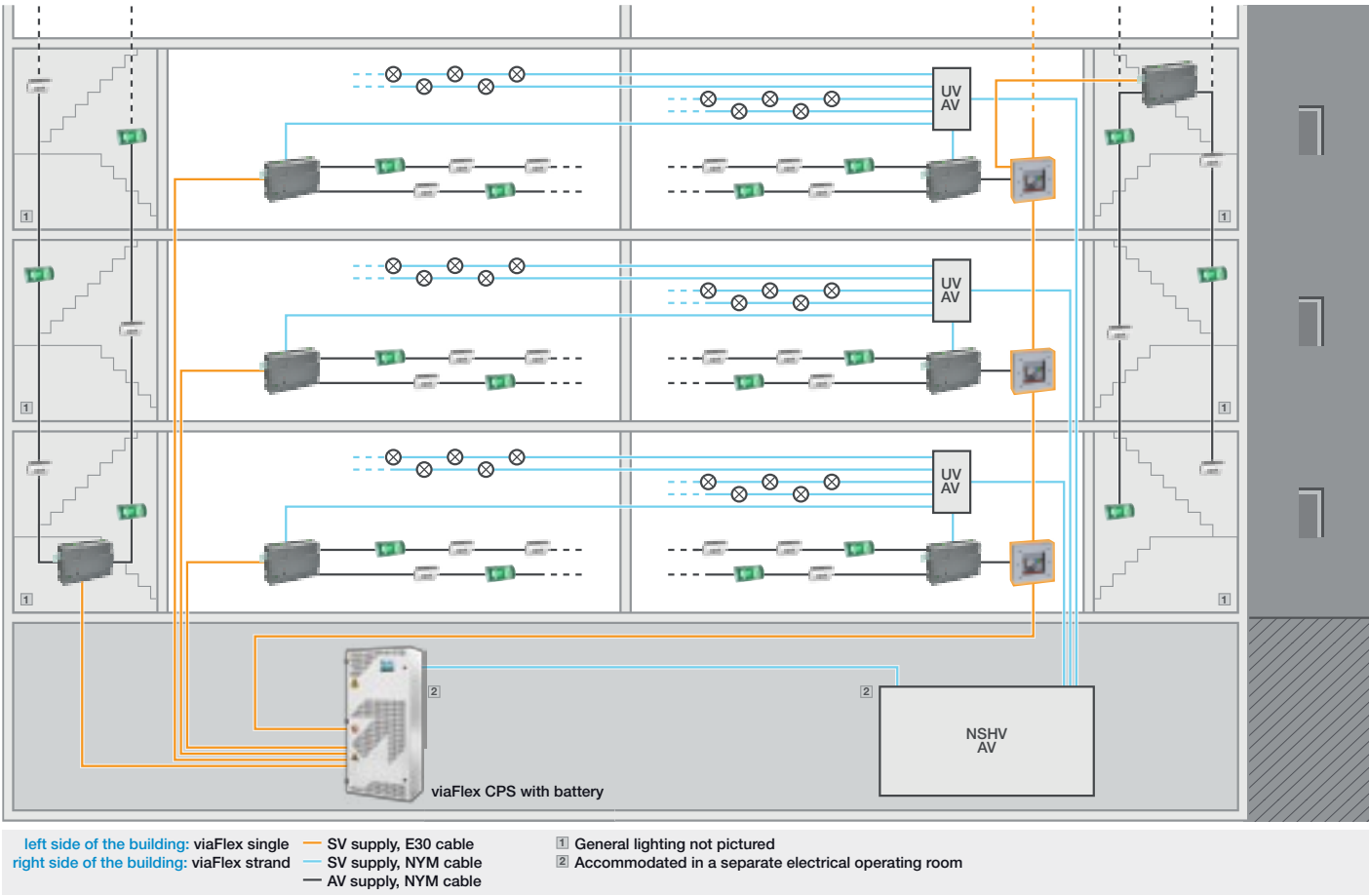
### The concepts compared

|                                           | Central systems                        | viaFlex classic (strand)                                    | viaFlex classic (single)                            |
|-------------------------------------------|----------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|
| Substation per fire compartment           | no                                     | yes                                                         |                                                     |
| Cable routing through the entire building | all final circuits                     | ideally only 1 line by using the E30 small distributor S01F | only 50 % of all final circuits by using viaFlex US |
| Functional integrity of E30               | for all final circuits in the building | ideally only necessary for 1 line (strand)                  | for only 50 % of all final circuits                 |

### Central systems



### viaFlex classic (single and strand)





Autonomously operating substation module

2 final circuits with inrush current limitation, to supply up to 20 luminaires, each with a max. load of 750 W / 750 VA:

- alternatively as a final circuit with inrush current limiter, for max. 1320 W / 1320 VA
- optionally with circuit duplication up to 16 final circuits

Each connected luminaire (max. 80 units in total) is activated individually via its address; mixed operation of all types of circuits in a final circuit can be individually configured for each individual luminaire or for luminaire groups

Feed-in from the sub-distribution of the general lighting (230 V 50 Hz) of the relevant fire compartment, and feed-in from the main distributor of the emergency power supply, 220 V DC or 230 V AC 50 Hz depending on the power supply

Temporary storage of all luminaire data for forwarding to the main distributor of the emergency power supply

Button to log in to viaFlex CPS

Protection of the final circuits with 8 AT / 6.3 × 32 (for circuit duplication with 3.15 AT / 6.3 × 32)

220 V DC output voltage with both mains and battery operation

4 inputs that are freely programmable via the software:

- switchable BS (general lighting switch query) and/or
- Network monitoring of the final circuit of the general lighting and/or
- Operation via viaFlex US ON/OFF and/or
- DS ON/OFF and/or
- Acknowledge BS (for operationally darkened rooms)

Expansion module I8 (option) with another 8 freely programmable isolated hardware inputs

DIN rail mounting, suitable for installation in:

- viaFlex RA1 or RA2
- and an extension for the viaFlex US module kit

Switch inputs affecting safety are monitored to detect open circuits and short circuits

DS switch clock

Isolated change-over contact for lighting control system, activated on (partial) power failure and when test function is run

Interfaces to connect a tablet or laptop

LED indicators for US ON operation and luminaire faults

Technical specifications

|                               |                         |
|-------------------------------|-------------------------|
| Module dimensions (H × W × D) | 150 (165) × 216 × 74 mm |
| Protection class              | IP 20                   |
| Protection class              | II                      |
| Colour                        | RAL 7012                |
| Power dissipation             | max. 30 W               |



Plastic wall distributor

Available as a finished plastic wall distributor made of polycarbonate, for surface mounting, with integrated viaFlex US module and terminals

With reserved space for expansion module I8 (optional) and network monitoring (optional)

Optionally available in protection class IP 65 (for other dimensions, steel wall housing)

Technical specifications

|                                                             |                                      |
|-------------------------------------------------------------|--------------------------------------|
| Distributor dimensions RA1 (H × W × D) [with 1x viaFlex US] | 450 × 300 × 132 mm                   |
| Distributor dimensions RA2 (H × W × D) [with 2x viaFlex US] | 600 × 300 × 132 mm                   |
| Cable entry                                                 | either at the top, bottom or lateral |
| Protection class                                            | IP 20                                |
| Protection class                                            | II                                   |
| Colour                                                      | RAL 7035                             |
| max. ambient temperature                                    | 40 °C                                |

Maintenance cost reduction through preventative lamp changes

Each viaFlex US substation automatically registers whether an individual luminaire connected to this US is switched on or not. This means that an operating hour counter is active for each luminaire. Knowledge of the operating time of each luminaire allows for a timely or preventive replacement of the same. This is particularly important for long-life LED luminaires to ensure the safety in the building. LED luminaires very rarely fail completely. Through ageing, light intensity continually decreases. After a few years, the minimum value is reached, under which they no longer sufficiently illuminate the pictogram (escape sign luminaire), or no longer guarantee the minimum illumination of 1 lx on the escape route (emergency light). For this purpose, a theoretically expected operating time value should be programmed individually for each lamp or



Module kit

Available as a modular kit for DIN rail mounting, for installation in standard electric distributors, consisting of:

- viaFlex US module
- Terminal block, mounted on DIN rail
- Harness, affixed to the aforementioned terminals
- Cable length designed according to DIN 43880 for centre distance (distance between rows) of 125 mm between the DIN rails for the viaFlex US module and the terminal block
- electrical connections via terminals 4 mm<sup>2</sup>, SV feed-in 10 mm<sup>2</sup>

luminaire in the viaFlex system. When this value is reached, the operator automatically receives a corresponding notification.

But even without entering such a comparison or reference value, it is helpful to know the real individual operating time of the lamps. In case one lamp in an inaccessible luminaire fails, for example, the operating times of neighbouring lamps can be taken into consideration to decide whether or not to preventatively replace those lamps at the same time. This also serves to reduce maintenance costs.



Luminaire module

Extremely small luminaire module for luminaire installation

Monitoring and switching of the emergency lighting lamp including network monitoring (EN 50172 Sec. 5.2) and general lighting circuit input

Communication with viaFlex US via the supply line, no data line

Setting and changing the circuit type via software programming anywhere on the viaFlex bus, no settings on the FLX required

FLX with unique, non-repeating address

Module and luminaire marked with address labels (as 4-digit number/letter combination and barcode)

Automatic address recognition at startup

Electrical connection via screwless terminals 1.5 mm²

Built into the polycarbonate plastic housing

Optionally available in strain-relief housing (for different dimensions), with double terminals 2.5 mm² for through-wiring

Technical specifications

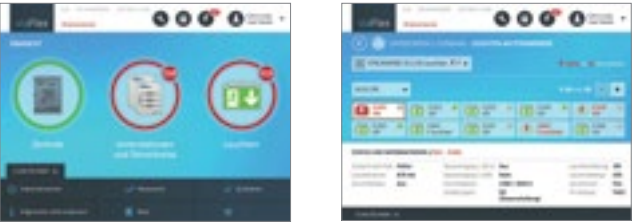
|                         |                                  |
|-------------------------|----------------------------------|
| Dimensions (H × W × D)  | 22 × 24.5 × 116.5 mm             |
| Performance range       | 3–150 W, 3–100 W or 1–18 W (LED) |
| Protection class        | IP 20                            |
| Protection class        | II                               |
| Colour                  | RAL 7035                         |
| Weight                  | approx. 40 g                     |
| Perm. temperature range | -10 to +70 °C                    |
| Power dissipation       | < 3 W                            |

Various options for assigning the luminaire address to the assembly site

- 1) Scanning the barcode onsite at the FLX or on the lamp during installation A barcode scanner, connected to the USB interface of a tablet or a laptop, can be used for this purpose. At the same time the luminaire text (e.g., installation site) and the circuit type can be entered. The next time an online connection is established between the PC and the viaFlex bus, this table data can be imported into the system.
- 2) Affix the barcode label to the building floor plan including a luminaire overview (or to a list of luminaires) the during the installation. The address label can be removed from the luminaire for this purpose. Later in the office, these plans can be read using a barcode scanner connected to a PC. At the same time, the freely editable luminaire text (e.g., installation site) and the circuit type can be entered for each luminaire.
- 3) During a tour with a tablet or laptop, the addresses on the luminaire can be recorded onsite, and the luminaire text (e.g., the installation site) and circuit type can be entered. An alternative but less convenient option for this tour is to print a list with all luminaires (or their addresses) detected automatically by the viaFlex system during commissioning.
- 4) Without using a barcode scanner, the luminaire address (a very short, 4-digit combination of numbers/letters) can always be copied manually from the barcode/address label on the FLX, on the luminaire or from a sticker on the building floor plan or a list of luminaires.



viaFlex PRO – operating and programming software



The built-in operating unit viaFlex Touch is included in the scope of delivery.

Additionally available as a software version for an external PC or laptop



viaFlex visualisation software

Clear, convenient visualisation and monitoring of up to 32 central power supply systems on one screen

Cost savings through multi-site monitoring, simplified inspection, rapid troubleshooting and automatic documentation

Suitable for networking with several operator stations

Displaying alarms, messages and current states, with action texts in case of malfunctions, and email/SMS notifications

Options for test initiation, processing and acknowledgement of messages

Various printing and file export options

Optional graphics editor to integrate building floor plans

Expandable by interfaces for other building management systems



Central control unit

Includes switching device, control unit, central battery, charging rectifier and US outputs/distribution

viaFlex Touch operating unit: built-in panel PC with 8" touchscreen and installed viaFlex PRO software for commissioning, configuration and operation

Storing of all system parameters and data (non-volatile configuration memory)

Free choice of outgoing circuits for single supply or through a shared strand

Charging unit designed and suitable for the following types of batteries:

- sealed lead acid batteries (OGiV)
- closed lead-acid batteries (OPzS, OGi)
- NiCd batteries

Technical specifications (standard version)

|                     |                                                 |
|---------------------|-------------------------------------------------|
| Dimensions (HxWxD)  | 1800x850x503 mm                                 |
| Output              | up to max. 3.2 kW/3 hrs. or max. 8.5 kW/1 hr.   |
| Battery compartment | for sealed lead acid batteries up to 66 Ah/10 h |
| Battery voltage     | 216 V                                           |

Front-access sheet steel housing, top cable entry, door hinge left (can optionally be changed to right onsite), door opening angle > 180°

Any other output and configuration deviating from the standard configuration are also possible

Optionally, viaFlex CPS can also be run as an AC system with an AC power source instead of the battery for safety reasons (e.g., TWISTER® S1)

Gateway for integration of viaFlex in the building bus of the GLT (option)

- Display of system status: operation, battery operation, fault, luminaire error, DS power supply

|                                                 |          |
|-------------------------------------------------|----------|
| System voltage                                  | 220 V    |
| Protection class                                | IP 20    |
| Colour                                          | RAL 7035 |
| max. number of viaFlex US that can be connected | 240 pcs  |



Small distributor with E30 functional integrity, with fuse block

Fire protection housing with E30 functional integrity (fire resistant for 30 minutes) in case of external fire

Use in accordance with LAR and supply via a shared strand enables savings in E30 cabling

Tested with installations as per DIN 4102 Part 12 E30 in a fire test, flame treated according to DIN 4102 Part 2 (EPC), test certificate without restriction on cable types or manufacturers, specifically with certified protected circuit

Suitable for wall and ceiling mounting

Max. cable cross section inlet and outlet (circuit integrity cables) 25 mm²

Built-in output to viaFlex US: D02 16 A, max. cross section 10 mm², optional second output possible

Cable entry from 2 sides possible

Technical specifications

|                    |                                |
|--------------------|--------------------------------|
| Type               | S01F                           |
| Dimensions (HxWxD) | 350 × 350 × 128 mm             |
| Colour             | light grey similar to RAL 7035 |
| Weight             | approx. 18 kg                  |



viaFlex TBL

Tableau for the status display of the emergency power supply in a central location, with optional remote control of the continuous light (DS)

LED indicators for:

- Operation
- Battery operation
- Fault
- Luminaire error
- DS power supply

Even during a power failure, the display remains active until the low-battery power protection is triggered

- Switch: DS power supply ON/OFF

Equipped with its own battery for continued display functioning during disconnections

Installation type: Surface- or flush-mounted (universally supplied)

Connection via terminals 1.5 mm²

Technical specifications

|                    |                  |
|--------------------|------------------|
| Housing            | plastic          |
| Dimensions (HxWxD) | 164 × 84 × 60 mm |
| Power supply       | 24 V             |
| Protection class   | IP 20            |

# viaFlex – The system for all occasions.

The viaFlex central battery system facilitates the optimal control, monitoring and maintenance of emergency and escape sign luminaires. viaFlex runs with only a few standardised components and is also extremely versatile. The system thus sets new standards in technical implementation: one system – many solutions – for every application!



## Classic viaFlex concept

**The flexible, centralised and decentralised emergency lighting concept**

- standardised, autonomous substation
- Savings of E30 installation materials

## viaFlex loop

**Emergency lighting without E30**

- No need for E30 cabling due to physical separation
- Strong cost-savings, e.g. in office buildings and industrial premises

## viaFlex AC

**Familiar comfort even without batteries**

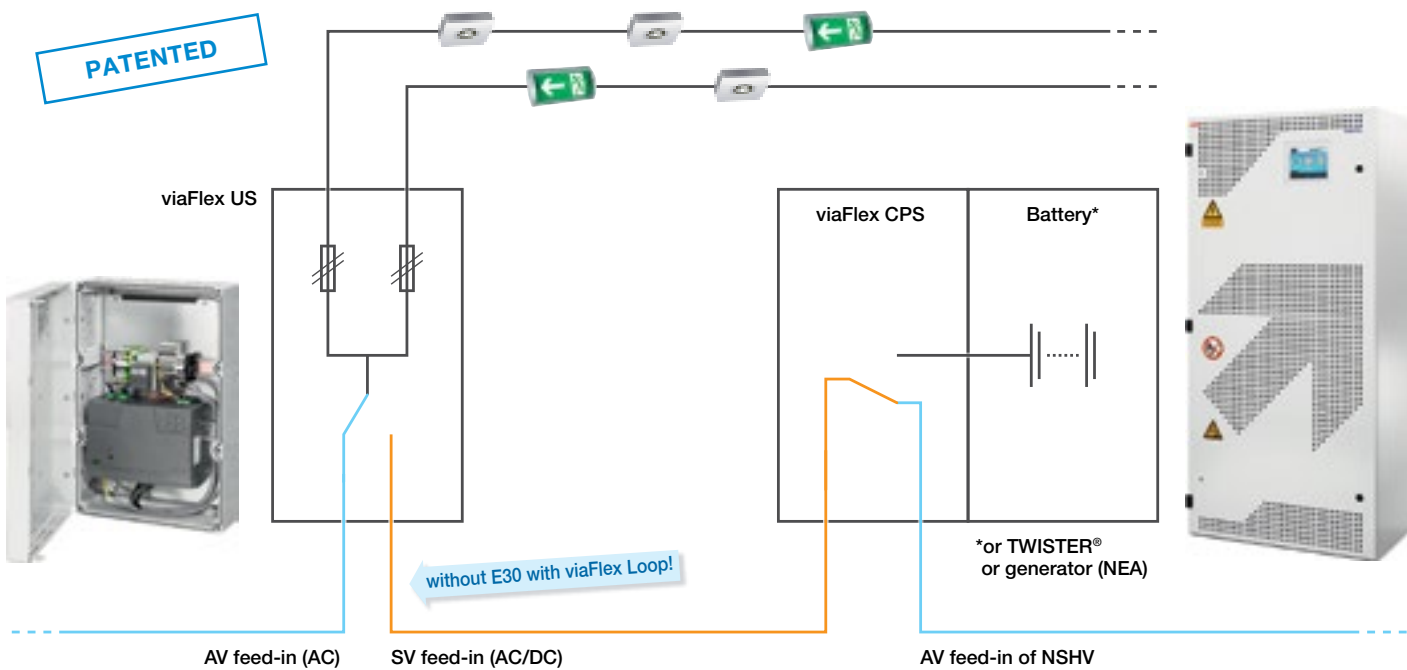
- Supply via TWISTER® S1 or generator (emergency power system)
- No battery, but all viaFlex advantages

## viaFlex SV

**Full-fledged emergency lighting solution for emergency power system supply**

- Supply via TWISTER® S1 or generator (emergency power system)
- Use of an existing SV line network

# The second feed-in of viaFlex US



The classic, decentralised viaFlex concept

The flexible viaFlex emergency lighting concept is particularly advantageous when the intelligent substation module viaFlex US is positioned locally. The independently operating viaFlex US is housed in the fire compartment of the relevant escape sign and emergency lights, and takes all necessary safety-related decisions.

In particular, the patented second feed-in and the change-over facility of the viaFlex US differentiate it from other systems. They are what makes the many diverse possible applications of the viaFlex solution possible, and they additionally increase the luminaires' safety and supply reliability.

The monitoring and switching of these two largely independent and redundant power supplies are organised as follows (see schematic diagram):

In the normal state, the substation is powered via the AV feed from the local sub-distribution of the general power supply. A failure of that supply is automatically detected in the viaFlex US and the integrated switching device switches to the SV feed from the viaFlex CPS central control unit (second feed-in). Feed-in will continue with AC for as long as the AV network is still active on

the viaFlex CPS. Only when this CPS power supply fails, the CPS is automatically switched to the battery or another power supply backup. The energy source for safety purposes (battery, TWISTER® S1 or generator) is thus only used when both the local AV distribution and the CPS feed-in from the low-voltage main distributor have failed.

Escape signs and emergency luminaires are therefore subject to a three-stage supply guarantee:

- from the AV sub-distribution (UV AV)
- from the low-voltage main distribution board (via CPS)
- from the power supply back-up

Due to the existing and preferred supply from the local UV AV, individual consumption-based billing is also possible for each user or tenant.

# The loop principle

## Emergency lighting without E30



Today's popular E30 installation is not a universal remedy, as it is not equally suitable for all building constructions, such as classic industrial premises made of steel and sheet metal. In addition, there are often difficulties regarding the correct installation type (e.g., bending radii) and with E30 distributors (e.g. lack of or inadequate certification, mounting problems).

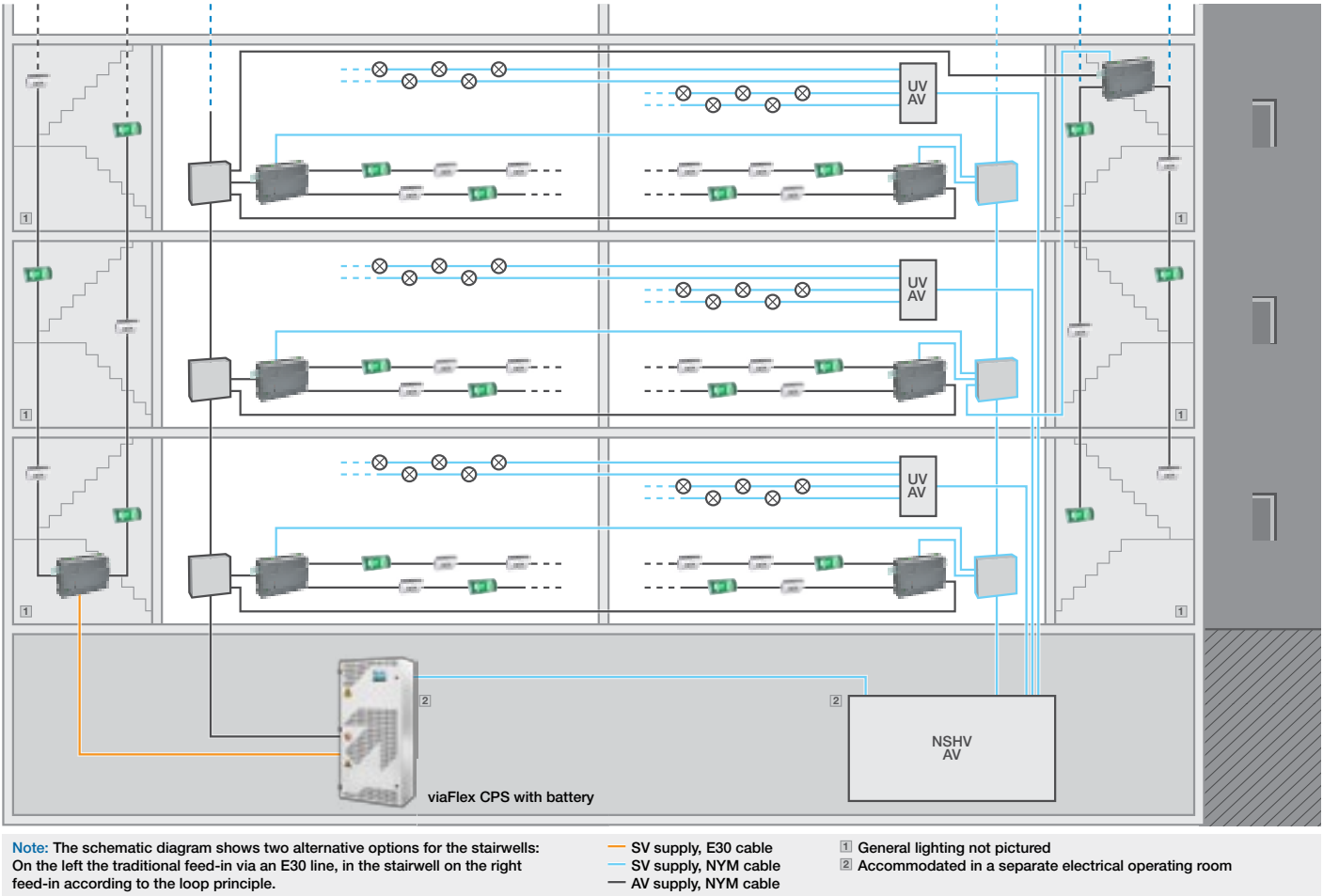
For such and similar cases, ABB Kaufel has developed the supply of emergency lighting in fire compartments according to the loop principle.

This principle is facilitated by the second feed-in and the change-over facility of the viaFlex US. Both are also indispensable prerequisites for the reliable functioning of the emergency lighting in the fire compartment according to the loop principle.

When the AV supply is included consistently, E30 cabling and E30 distributors can largely be done without. The supply of the emergency lighting is split among two separate systems, to a more equal degree than previously: AV and SV. The AV and SV strands must be structurally separated. The AV and SV main distributors must be housed in different, structurally separate electrical operating rooms.

### Advantages of the loop principle

- No use of E30 material
- Extended functional integrity of more than 30 min. due to spatial separation
- Especially suitable for industrial premises and other large areas with virtual fire compartments, but also in many other applications, e.g. in office buildings



### Legal foundations

MLAR 2005-11

#### Item 5.1.1

The electric wiring systems for safety systems and equipment governed by building regulations must be constructed, **or separated by components**, so that the safety systems and equipment remain operational for a sufficiently long period of time in the event of a fire (functional integrity).

DIN VDE 0100-560:2013-10

#### Item 560.5.2

Safety-related devices, which also need to maintain functional integrity in case of fire, must also meet the following additional criteria: [...]

- All equipment belonging to the safety-related installations must be protected in such a way that it remains fire-resistant for a sufficiently long period of time, either based on its design **or construction type**.

Note: The power source for safety purposes is generally present in addition to the regular power supply, e.g. the power supply from the public electricity grid.

DIN VDE 0100-560:2013-10

#### Item 560.8.1

[...] Cable and wiring systems must be affixed and erected in such a way that the functionality of the circuits is not impaired.

Note 1: Examples of a system that maintains the necessary protection against fire and mechanical damage may include: [...]

- Cable and wiring systems in separate fire compartments**

# viaFlex AC

## Familiar comfort even without batteries



In the even of power failures, with viaFlex AC exit signs and emergency lights are not powered by a battery, but by an AC back-up power supply such as the TWISTER® S1 or a generator of the emergency power system.

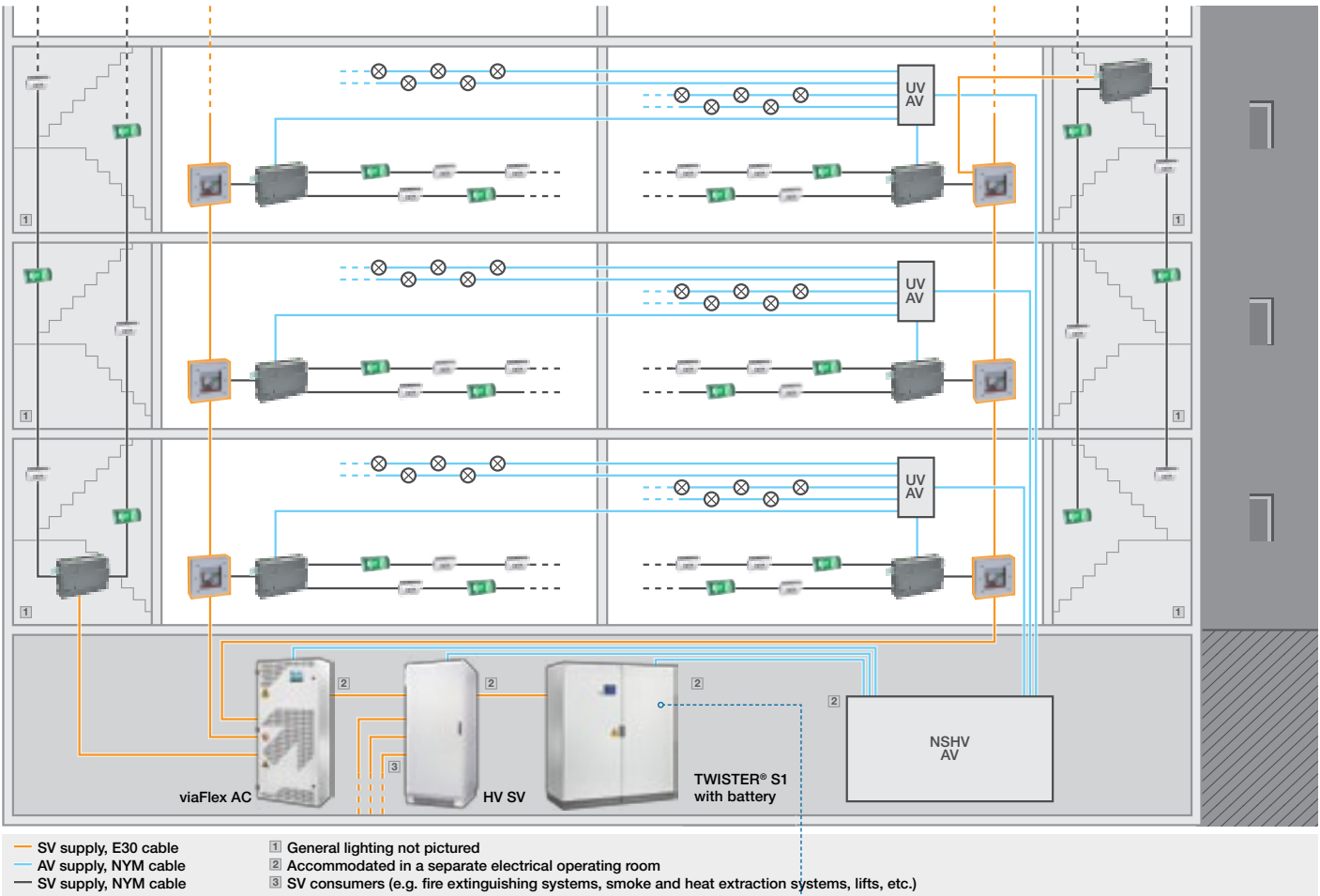
Such emergency power supplies primarily serve to supply emergency systems with a larger output. The relatively low power additionally required for the emergency lighting often facilitates supply from the same SV source. When using viaFlex AC, all the advantages of the viaFlex concept coupled with the usual full functionality of viaFlex central battery systems are available. There is therefore no limitation to the mere monitoring of the luminaires, as with standard emergency power systems!

The following can be easily implemented, for example:

- Mixed operation of permanent connection and stand-by circuit in one circuit, with central programming and the option to change the circuit type
- Programming of automatic, individual test times per viaFlex US substation, i.e. per user or tenant
- Permanent connection timer, individually per viaFlex US
- Simultaneous switching of selected lamps together with the general lighting through existing standard switch inputs at viaFlex US
- Individual billing of energy costs per user or tenant
- Visualisation of the system and faults, including the lamps, with viaFlex senso \*

With viaFlex AC, each lamp of the emergency lighting can be monitored individually – without an additional bus line in the final circuit. For this purpose, the multifunctional and very small viaFlex FLX lamp module is deployed.

\* Contact us by phone or email to order our brochure "viaFlex® senso – Visualisation software for viaFlex emergency lighting" free of charge!



### Benefits of viaFlex AC \*\*

- ..... Luminaire monitoring and control without a bus line
- ..... Ability to integrate into existing AC emergency lighting installations, no change in the final circuit installations necessary
- ..... Fewer final circuits through mixed operation as compared to conventional AC emergency lighting installations
- ..... Inspection and maintenance cost savings through automatic individual luminaire monitoring
- ..... Savings in E30 installation material through implementation of the decentralised viaFlex concept

\*\* Standard emergency power systems are AC emergency lighting installations with bus-monitored lamps



# viaFlex SV

## Emergency light with emergency power system supply



In the event of power failures, with viaFlex SV exit signs and emergency lights are not powered by a battery, but by an AC back-up power supply such as the TWISTER® S1 or a generator of the emergency power system.

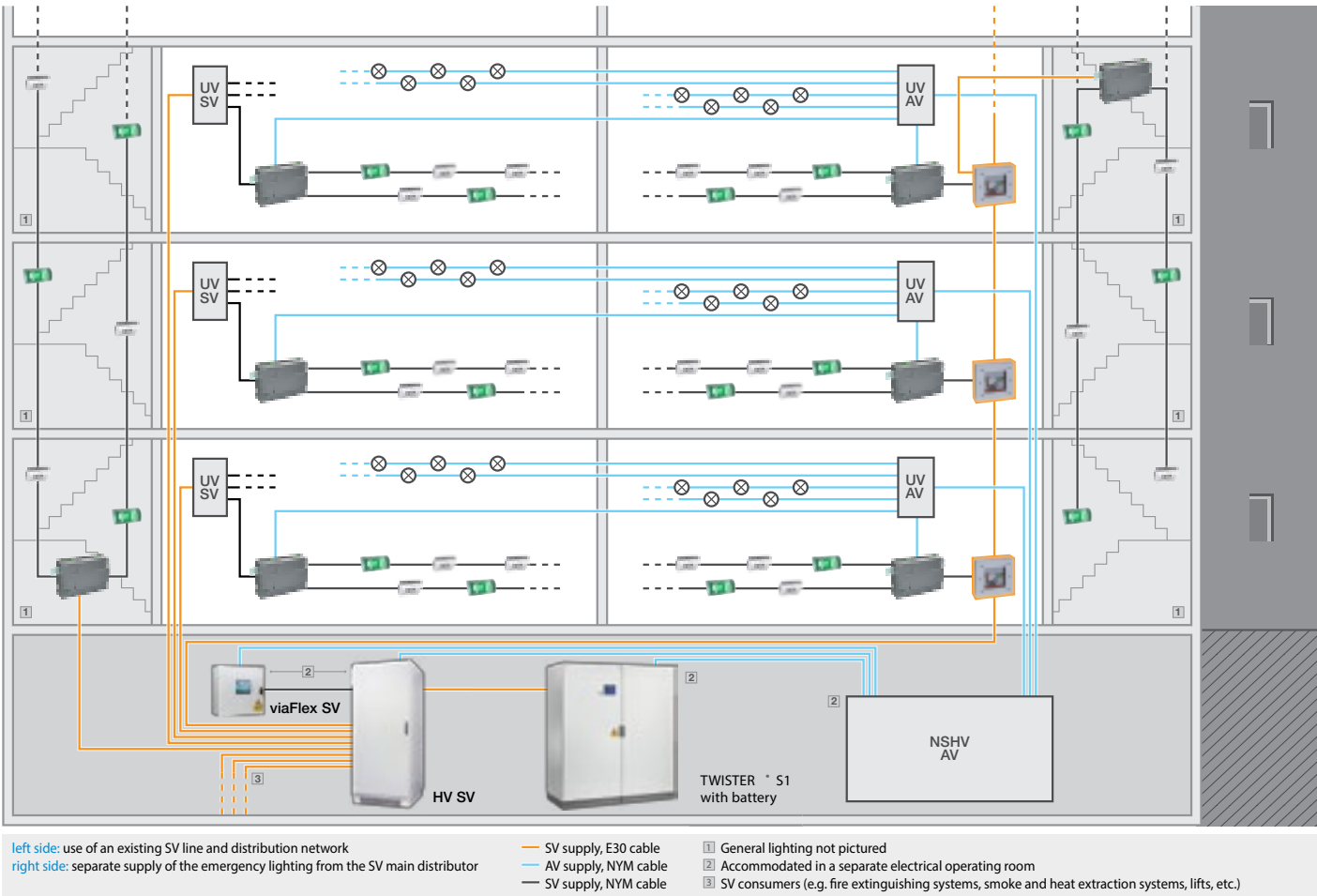
Such emergency power supplies primarily serve to supply emergency systems with a larger output. The relatively low power additionally required for the emergency lighting often facilitates supply from the same SV source. When using viaFlex SV, all the advantages of the viaFlex concept coupled with the usual full functionality of viaFlex central battery systems are available. There is therefore no limitation to the mere monitoring of the luminaires, as with standard emergency power systems!

The following can be easily implemented, for example:

- Mixed operation of permanent connection and stand-by circuit
- in one circuit, with central programming and the option to change the circuit type
- Programming of automatic, individual test times per viaFlex US substation, i.e. per user or tenant
- Permanent connection timer, individually per viaFlex US
- Simultaneous switching of selected lamps together with the general lighting through existing standard switch inputs at viaFlex US
- Individual billing of energy costs per user or tenant
- Visualisation of the system and faults, including the lamps, with viaFlex senso\*

With viaFlex SV, each lamp of the emergency lighting can be monitored individually – without an additional bus line in the final circuit. For this purpose, the multifunctional and very small viaFlex FLX lamp module is deployed.

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### Differences between viaFlex SV and AC

In contrast to viaFlex AC, with viaFlex SV the load power consumption does not go through the CPS. The viaFlex SV central control unit essentially serves only to control and store data. It can therefore be stored in a small wall-mounted housing and does not require functional integrity feed-in.

The escape signs and emergency luminaires are usually powered directly by the local SV sub-distributor (left side of the building in the above illustration) or by the SV main distributor (right side of the building). With reduced installation efforts, viaFlex SV can therefore be supplemented in existing installations through extensive utilisation of an existing SV line system. A very high security of supply is ensured through two independent feed-ins from the viaFlex US substations, from the local sub-distribution of the general power supply (UV AV) and the SV distribution.

### Advantages of viaFlex SV

No bus line

Reduced installation costs and efforts through use of an existing SV line network

Fewer final circuits through mixed operation as compared to conventional AC emergency lighting installations

Inspection and maintenance cost savings through automatic individual luminaire monitoring

Minimum floor space needed owing to the small, compact wall-mounted housing of the viaFlex SV central control unit (H x W x D: 500 x 500 x 250 mm)



viaFlex SV  
central control unit

List of relevant regulations

| Regulation                                                          | Subject                                                                                                                                                                                                                                                                                                                                                                                                                                                    | German Standard  |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| MLAR/LAR                                                            | <b>Model Conduit Systems Directive</b><br>Amended November 2005, firmly anchored in the state building codes of all states (except NRW).                                                                                                                                                                                                                                                                                                                   |                  |
| EltBauVO<br>(depending on the state also<br>EltBauV, EltBauR, etc.) | <b>Regulation on the Construction of Operating Rooms For Electrical Systems</b><br>Prescribes the positioning of CPS, LPS and batteries before in designated electrical equipment rooms. Applies in all German states (except for Bremen, with limitations in Brandenburg and Hamburg).                                                                                                                                                                    |                  |
| DIN EN 50171:2001-11                                                | <b>Central power supply systems</b><br>Construction standard – describes how the central battery system CPS must be set up.                                                                                                                                                                                                                                                                                                                                | DIN VDE 0558-508 |
| DIN EN 50172:2005-01                                                | <b>Emergency lighting systems</b><br>Installation standard – describes how the emergency lighting system must be set up.                                                                                                                                                                                                                                                                                                                                   | DIN VDE 0108-100 |
| DIN V VDE V<br>0108-100:2010-08                                     | <b>Emergency lighting systems</b><br>German pre-standard to an installation standard; based on DIN EN 50172 (VDE 0108-100):2005-01, which it supplements by points that are not governed by it.<br><br>DKE UK 221.3 has recommended its application since the draft was published in October 2005.<br><br>If a fire protection certificate, as part of the planning permission, or a private contract refers to this standard, its application is binding. |                  |
| DIN EN 1838:2013-10                                                 | <b>Emergency lighting</b><br>Describes where and how emergency and escape sign luminaires must be positioned.                                                                                                                                                                                                                                                                                                                                              |                  |
| DIN VDE 0100-560:2013-10                                            | <b>Setting up low voltage systems</b><br>Parts 5–56: Selection and setup of electrical equipment – safety-related installations.<br><br>Installation standard – amends and largely replaces DIN VDE 0100-718.                                                                                                                                                                                                                                              |                  |
| DIN VDE 0100-718:2014-06                                            | <b>Setting up low voltage systems</b><br>Parts 7–718: Requirements for special operating facilities, rooms and installations – public facilities and workplaces.<br><br>Installation standard – contains virtually no relevant requirements relating to the emergency lighting anymore. These were transferred to DIN VDE 0100-560.                                                                                                                        |                  |
| DIN EN 50272-2:2001-12                                              | <b>Safety requirements for batteries and battery installations</b><br>Essentially describes the placement, ventilation and charging of the battery.                                                                                                                                                                                                                                                                                                        | DIN VDE 0510-2   |

Functional integrity of the distributors and the circuit system

Requirements relating to the functional integrity of distributors of safety equipment, and of the wiring system are defined in the MLAR (Model Conduit Systems Directive) or in the state law of the states taken over by LAR. The key requirement can be summarised as follows: A fault in one fire compartment must not lead to a fault in another fire compartment within a period of at least 30 minutes.

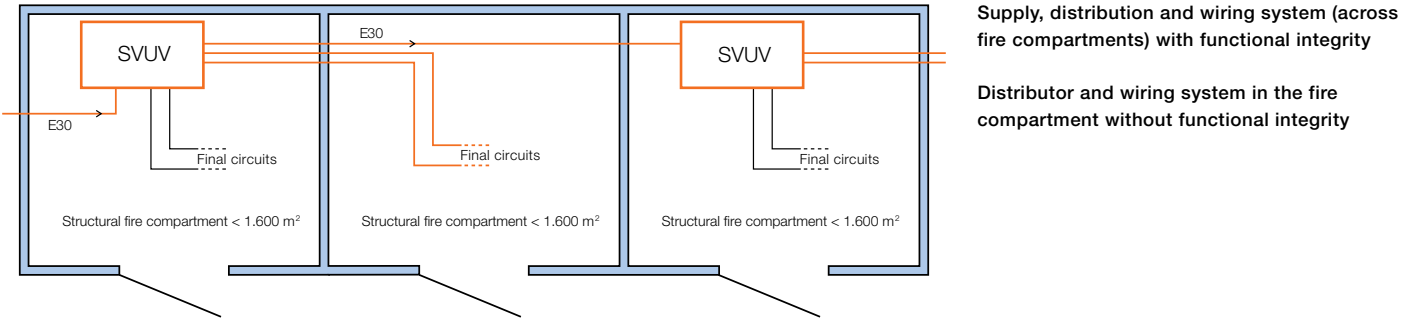
- Wiring from the main distributor of the emergency power supply to the sub-distributor whilst fundamentally maintaining E30 functional integrity
- Sub-distributors must be housed in designated rooms with functional integrity that are not used for any other purpose.

Alternatively, the distributor may be enclosed by components of non-combustible materials, which need to guarantee functional integrity (requiring building inspectorate usability certification and test certificate).

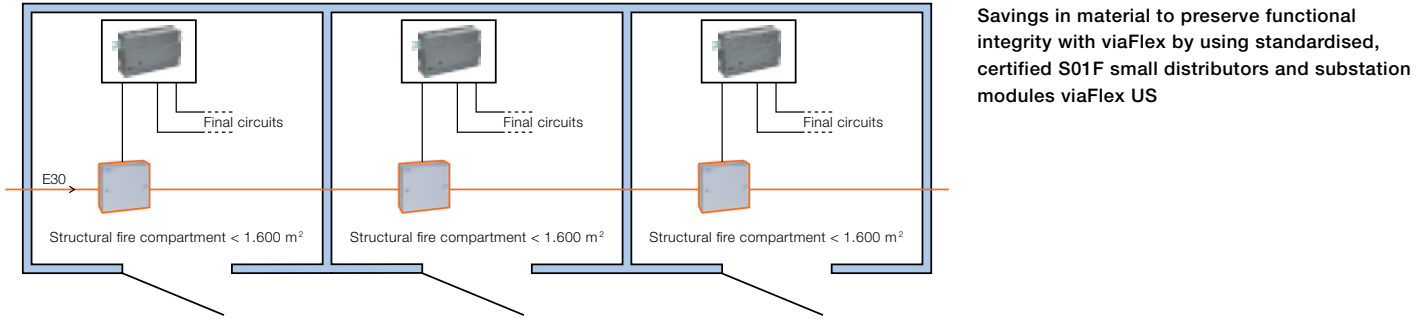
- Functional integrity of the distributor and wiring system can be done away with if these only serve to power the fire compartment in which they are located.
- Fire compartments of max. 1,600 m²
- Structural fire compartments > 1,600 m² are to be divided into virtual fire compartments < 1,600 m² (except LAR North Rhine-Westphalia, where the limitation to 1,600 m² does not apply).

For further information on this topic, please request our “Emergency lighting planning essentials”!

Previously powered by the sub-distributor as standard



Powered through viaFlex



# Emergency lighting system requirements

When dealing with structural facilities for gatherings and the resulting emergency lighting requirements, table A.1 in the normative appendix A of pre-standard DIN V VDE V 0108-100:2010-08 is helpful. It is reproduced here in simplified form. Crucial for its applicability are the local conditions of the project and the criteria of the currently applicable state regulations and directives, such as the Regulations on Places of Assembly, which specify the minimum values for people, seats, areas, beds, etc.

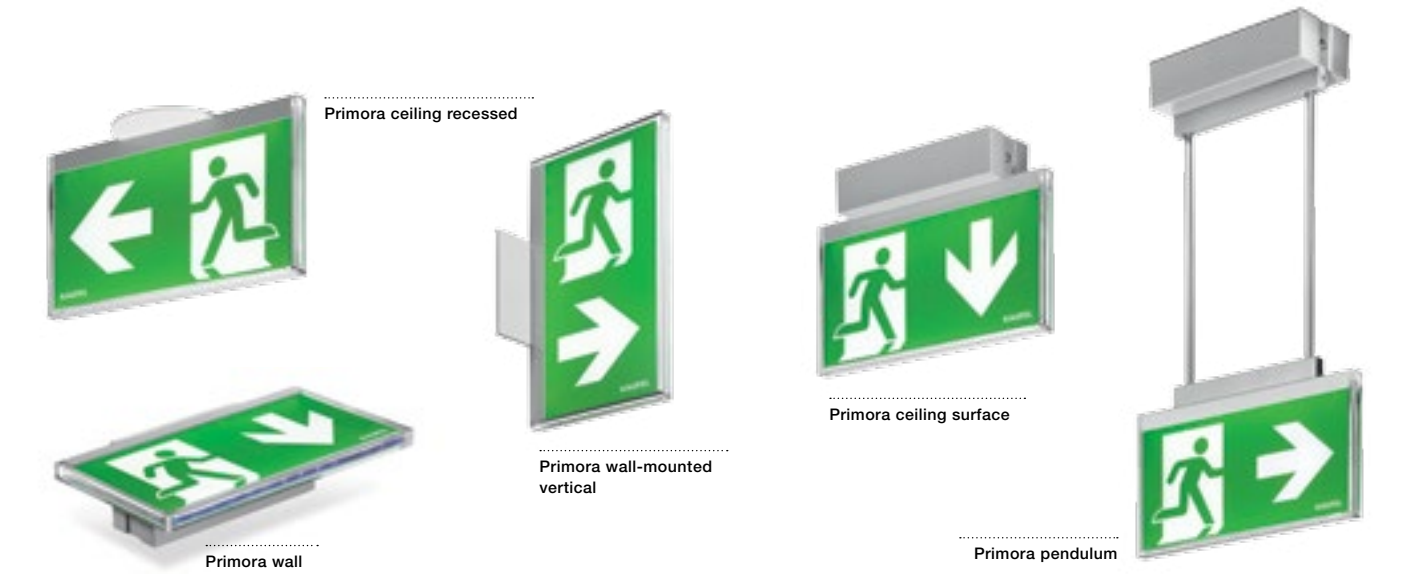
| Structural facilities for gatherings         | Requirements                |                         |                                                                  |                                                      |                                   |                                                 |                       |                                       |                                             |                                              |                             |
|----------------------------------------------|-----------------------------|-------------------------|------------------------------------------------------------------|------------------------------------------------------|-----------------------------------|-------------------------------------------------|-----------------------|---------------------------------------|---------------------------------------------|----------------------------------------------|-----------------------------|
|                                              | Illuminance [lx]            | Max. switching time [s] | Rated operating time of the power source for safety purposes [h] | Lit and backlit safety signs in continuous operation | Central power supply system – CPS | Power supply system with output reduction – LPS | Single battery system | Power generator no interruption (0 s) | Power generator brief interruption (≤0.5 s) | Power generator average interruption (≤15 s) | particularly secure network |
| Places of assembly, theatres, cinemas        | 1                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Temporary structures (as places of assembly) | 1                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Exhibition halls                             | 1                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Sales outlets                                | 1                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Restaurants                                  | 1                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Accommodation facilities, homes              | 1                           | 1 <sup>0</sup>          | 8 <sup>1</sup>                                                   | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | –                           |
| Schools                                      | 1                           | 1 <sup>0</sup>          | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | –                           |
| Parking garages, underground car parks       | 1                           | 15                      | 1                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | –                           |
| Airports, railway stations                   | 1                           | 1                       | 3 <sup>2</sup>                                                   | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
| Residential high-rises                       | 1                           | 1 <sup>0</sup>          | 8 <sup>1</sup>                                                   | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | –                           |
| Other high-rises                             | 1                           | 1 <sup>0</sup>          | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | –                           |
| Escape routes in workplaces                  | 1                           | 15                      | 1                                                                | not required                                         | x                                 | x                                               | x                     | x                                     | x                                           | x                                            | x                           |
| Particularly hazardous workplaces            | ≥15                         | 0.5                     | 3 <sup>3</sup>                                                   | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | x                           |
| Stages                                       | 3                           | 1                       | 3                                                                | x                                                    | x                                 | x                                               | x                     | x                                     | x                                           | –                                            | –                           |
|                                              | x permitted – not permitted |                         |                                                                  |                                                      |                                   |                                                 |                       |                                       |                                             |                                              |                             |

<sup>0</sup> Depending on the risk of panic up to 15 sec.  
<sup>1</sup> 3 hrs is sufficient if illuminated buttons serve as local switching devices and are mounted in such a way that an illuminated button can be seen from any location in case the general lighting fails. The emergency lighting must switch off again automatically after a set time when it is supplied from the power source for safety purposes.  
<sup>2</sup> For aboveground areas of railway stations, 1 hr may also be permitted, depending on the evacuation concept.  
Caution: Deutsche Bahn has its own regulations for lighting systems in passenger transport systems 954.9103  
<sup>3</sup> Period of time individuals are faced with a threat

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