



FZB

Central Battery System

04.2011



FZB-Central Battery Systems
From page 8

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FZB Central Battery System
in fire protection housing
From page 27

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Table A.1 – Requirements of the electrical system for security lighting

Extract from VDE 0108-100 (Draft: 2007 – 2008)

Requirements

Examples of structural installations where people gather	Intensity of illumination, lx	Switching time, see max.	Design operating duration of the power source for security purposes – hours	Illuminated or back-lit safety signs in constant operation	Central power supply system – CPS	Power supply system with limitation – LPS	Individual battery system	Power generating unit without interruption (0.s.)	Power generating unit Short interruption (<= 0.5 s)	Power generating unit Medium interruption (<= 15 s)	Specially secured network
Meeting places (excluding flying structures), theatre, cinemas	^{b]} 1	1	3	X	X	X	X	X	X	-	-
Flying structures that are meeting places	^{b]} 1	1	3	X	X	X	X	X	X	-	-
Exhibition halls	^{b]} 1	1	3	X	X	X	X	X	X	-	-
Sales centres	^{b]} 1	1	3	X	X	X	X	X	X	-	-
Restaurants	^{b]} 1	1	3	X	X	X	X	X	X	-	-
Places of accommodation, homes	^{b]} 15 ^{a]}	15 ^{a]}	8 ^{e]}	X	X	X	X	X	X	X	-
Schools	^{b]} 15 ^{a]}	15 ^{a]}	3	X	X	X	X	X	X	X	-
Indoor car parks, underground garages	^{b]} 15	15	1	X	X	X	X	X	X	X	-
Airports, stations	^{b]} 1	1	3 ^{f]}	X	X	X	X	X	X	-	-
High-rise buildings	^{b]} 15 ^{a]}	15 ^{a]}	3 ^{d]}	X	X	X	X	X	X	X	-
Escape routes in work locations	^{b]} 15	15	1	X ^{g]}	X	X	X	X	X	X	X
Places of work at particular risk	^{b]} 0,5	0,5	^{c]}	X	X	X	X	X	X	-	X
Platforms / stages	3	1	3	X	X	X	X	X	X	-	-

X admissible, - N/A

^{a]} Depending upon the risk, from 1 s to 15 s.

^{b]} Intensity of illumination of the security lighting according to DIN EN 1838.

^{c]} The duration of the risk to persons.

^{d]} In blocks of residential flats 8 hours if the circuit is not designed according to 4.4.8.

^{e]} 3 hours is sufficient if the circuit is designed according to 4.4.8.

^{f]} For above-ground areas of stations, 1 hour is also admissible depending upon the evacuation concept.

^{g]} Not necessary for escape routes in work locations

Installation provisions for system projection

Principles for provision of security lighting include:

Building regulations

Regulation governing electrical operating installations ("Elt Bau VO")

Guideline governing cabling and line installations ("MLAR")

DIN VDE 0100, Part 560

DIN VDE 0108-100

DIN EN 60598, Part 2.22

BGR 216

BGV 8

DIN EN 1838

DIN 4844

Designation of escape routes

The following emergency signs are to be used to designate escape routes

Escape route through exit



Escape route to the right ¹⁾



Escape route to the left ¹⁾



Regulations:

BVG A8, section 4.3

DIN 4844, part 2, section 2.4 and Annex A.1w

¹⁾ On the emergency signs the arrow indicating the direction may also point towards the top or bottom corner point of the door in order to designate the progression of the emergency exit, e.g. stairs.

The emergency signs must have a side ratio of 1:1 for square emergency signs and 1:2 for rectangular emergency signs.

The emergency signs must have white symbols on a green background.

The identifying signs require an average light density of 200 cd/m² on the emergency sign.

BVG A8, section 4.4

DIN 4844, part 1, sect. 4.4
BGR 216, sect. 3.1.5 and 3.1.6

BGV A8, section 4.4 and 5
DIN EN 1838, section 5.2
DIN 4844, part 1, section 5
DIN 4844, part 1, section 7
BGV 8, section 4.91 a. 4.9.3
DIN EN 1838, section 5.6
DIN 4844, part 1, section 7

Determining the recognition width

The recognition width E(m) is calculated according to the following equation:

$$E = h * Z$$

where

h = height of the emergency sign (m)

z = distance factor

z = 200 for internally illuminated emergency signs

BGV 8, section 4.9.1 and 4.9.3

DIN EN 1838, section 5.6
DIN 4844, part 1, section 7



Positioning of emergency sign lights

At all emergency exits (possibly several emergency sign lights if an emergency exit cannot be directly recognised).	BGR 216, section 3.2.2.1.4
At all exits along the escape route.	DIN EN 1838, section 4.1

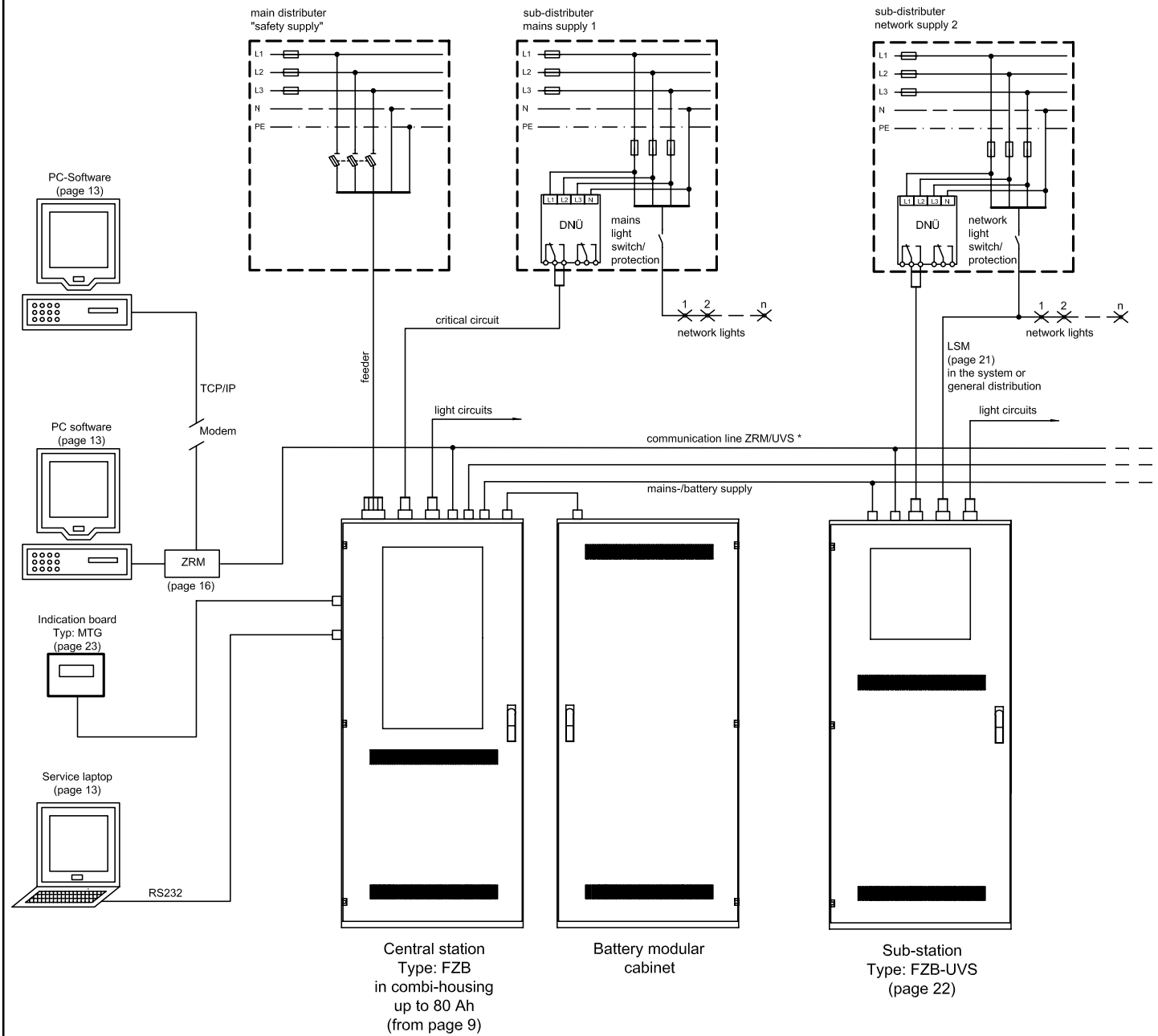
Illumination of escape routes

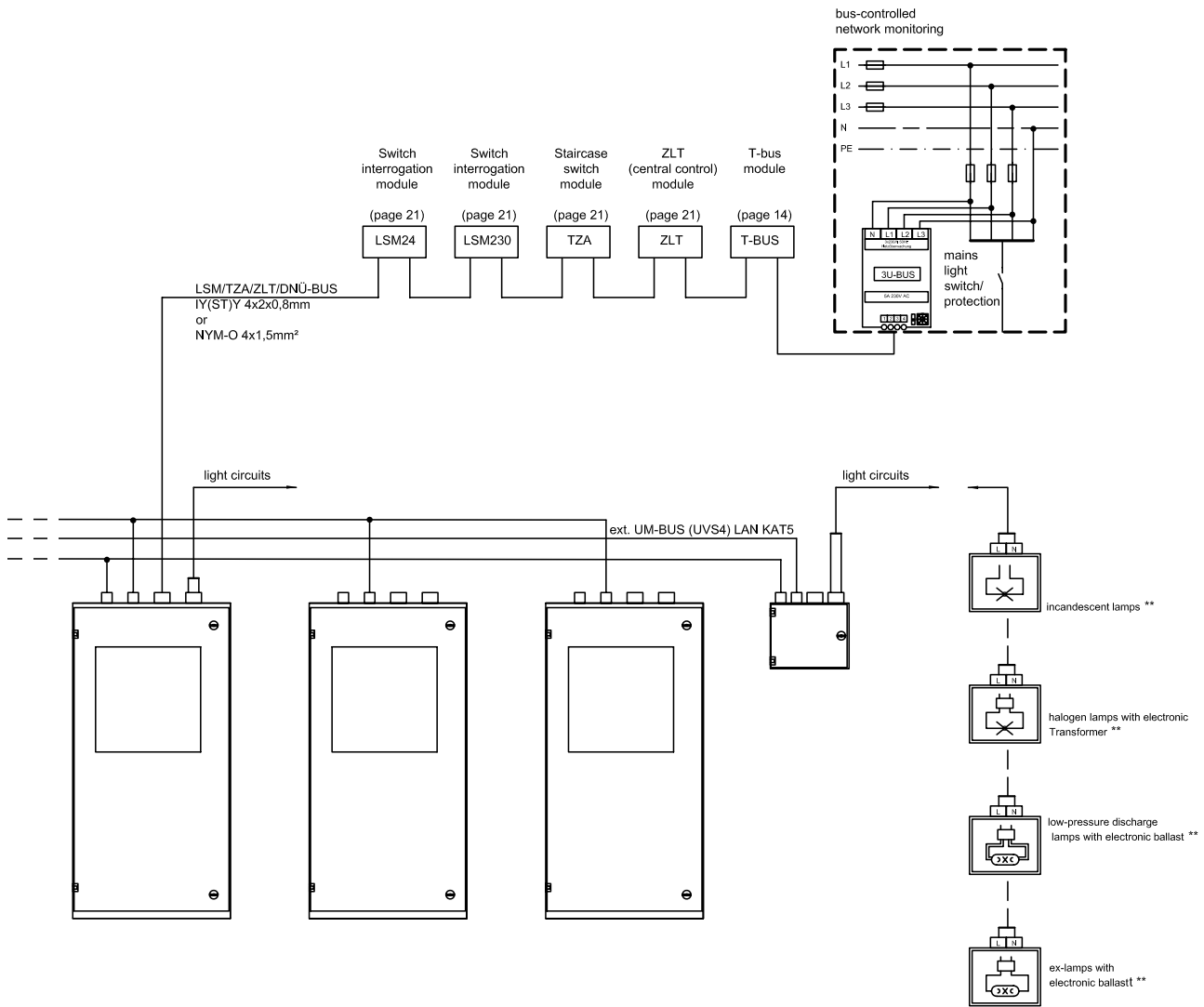
The following intensity of illumination is necessary for illumination of the escape routes:	
1 lx on the centre line of the escape route in a horizontal plane of 0.2 m above the ground / steps.	BGR 216, section 3.2.2.1.4
In case of escape routes with a width < 2 m:	
1 lx on the centre line and 0.5 lx in the central region of the escape route in a horizontal plane of 0.2 m above the ground / steps.	DIN EN 1838, section 4.2.1
In case of escape routes with a width > 2 m:	
As for several escape routes with a width < 2 m.	
or	
0.5 lx on the whole area on the escape route, with the exception of an edge area of 0.5 m, in a horizontal plane of 0.2 m above the ground / steps	DIN EN 1838, section 4.2.1
5 lx close to each first aid point (maximum 2 m distance) in a horizontal plane of 0.2 m above the ground.	DIN EN 1838, section 4.1
5 lx close to each fire alarm unit (maximum 2 m distance) in a horizontal plane of 0.2 m above the ground.	
5 lx close to each fire fighting unit (maximum 2 m distance) in a horizontal plane of 0.2 m above the ground	

Positioning of the security lights

On the escape route	BGR 216, section 3.2.2.1.4
At each junction, interruption and change of escape routes	DIN EN 1838, section 4.1
On each step on the escape route	
At each level change on the escape route	

System circuit diagram - FZB central battery system





Sub-station
Type: FZB-UVS
(page 22)

Group supply
Type: FZB4-24
(page 32/33)

Group supply
Type: FZB6-48
(page 34/35)

Mini-sub-station
Type: FZB-UVS4
(page 22)

* Communication line ZRM/UVS up to 1000 m.
- Profibus L2/F.I.P. 02Y(ST)CY 1x2x0.64 (dry areas)
- Profibus L2/F.I.P.02Y(ST)CY2Y 1x2x0.64
(earth area, rough industrial operations)

** (optionally with monitoring or multi-functional component ADR20/ADR20-ILS)

(page 24/25)



FZB Central battery system

Freely programmable central battery system with serial addressing and current circuit monitoring according to DIN VDE 0108-100.

Central battery units of the FZB series constitute a meaningful and economic addition to the constantly increasing requirements in safety technology. The freely programmable system with its flexible structure allows simple installation with the advantage of optimal adaptation to all possible switching variations, including general illumination. A high level of safety and redundancy through plug-in end current circuit modules. End current circuits and connected security lights and emergency sign lights are current-monitored or individually addressed and are constantly monitored.

FZB central battery systems comply with all the requirements upon the security power supply system of security lighting according to DIN VDE 0108-100, DIN EN 50171, DIN EN 50172, DIN EN 50272, DIN VDE 0510 and DIN 5035 Part 5. They serve to protect human life in buildings and installations according to DIN VDE 0108-00, ASR 7/4, OVE (Austrian Association of Electrical Engineering) 2/93 and NFPA/Life SAFETY CODE.

Design of the FZB central battery system

- 19" cabinet system with swivel frame and 19" component carrier
- Automatic microprocessor-controlled ECS testing device according to DIN VDE 0108 part 1, 6.4.3.10
- Constant checking of the functional capability of all components through the integrated monitoring and testing system, display and permanent storage of all relevant data with date and time. Display and print-out of all test results of the last 4 years (see also description on page 12).
- Freely programmable 19" end current circuit modules UM 3*4A (ILS). Individual switching for each end current circuit, compliant with VDE (Electrical Engineering Association) 2-pole front-side fuse protection. Individual lights or current monitoring (see also page 17).
- Redundant primary-switched 19" charging components (LBG) with 1.25 or 10 A.

Optional:

- ILS technology: security or emergency sign lights can be combined in any way in an end current circuit, with free assignment of the circuit type (stand-by operation, constant operation, switched light), centrally programmed, and also assigned to any input contacts via the ECS central point.
- Connection to a PC workspace software program by means of service laptop or to the central computer (ZRM).
- Reading and external storage of the system configuration and the test reports.
(For details, please see description on pages 17 and 18.)

Technical Data:

Netzversorgung:

Mains supply:	380V (+/- 10 %)
Fuse protection:	max. 63A, 3-pole *)
Terminals:	max. 35mm ² *)

Battery supply:

Battery voltage:	216V
Fuse protection:	max. 125A, 2-pole *)
Terminals:	max. 35mm ² *)
Line introduction:	from above, optionally from below

Mechanical structure:

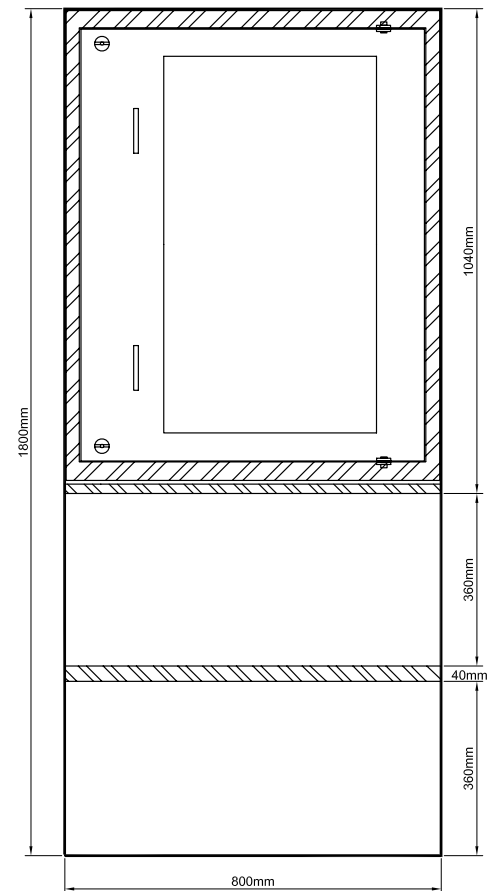
Housing:	Sheet steel, RAL 7035
Assembly:	Standing position
Protection type:	IP20
Protection class:	I
Dimensions (H*W*D) mm:	1800*800*600 (400)
Ambient temperature:	-5°C to +35° C

Lockable door with large-area transparent panel made of acrylic glass.

Optional:

Switch cabinet base 100 mm / 200 mm on request
IP 54 on request

*) Other sizes available on request



Cabinet

1800 x 800 x 600mm (400mm)
with 2 battery compartment

Equipment overview: FZB central battery systems

Max. number of end current circuit modules: UM	Max. number of light circuits	Max. number of additional modules: LSM	Max. battery capacity (Ah)	Cabinet dimensions H*W*D mm
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FZB - standing distributor

	Max. number of end current circuit modules: UM	Max. number of light circuits	Max. number of additional modules: LSM	Max. battery capacity (Ah)	Cabinet dimensions H*W*D mm
FZB 15	5	15	3	-	1800*800*600 (400)
FZB 30	10	30	3	-	1800*800*600 (400)
FZB 45	15	45	6	-	1800*800*600 (400)
FZB 60	20	60	6	-	1800*800*600 (400)

FZB - horizontal unit

	Max. number of end current circuit modules: UM	Max. number of light circuits	Max. number of additional modules: LSM	Max. battery capacity (Ah)	Cabinet dimensions H*W*D mm
FZB 15	5	15	3	80	1800*800*600
FZB 30	10	30	3	80	1800*800*600
FZB 45	15	45	6	42	1800*800*600
FZB 60	20	60	6	42	1800*800*600



FZB Battery cabinet

Battery cabinet as a modular cabinet for the FZB electronic cabinet with lockable door and ventilation openings.

Technical Data

Battery voltage:	216V
Battery discharge current:	see table
Battery capacity:	see table
Power rating:	see table
Housing:	Sheet steel, RAL 7035
Assembly:	Standing
Protection type:	IP20 (IP54 optional)
Protection class:	I
Dimensions (H*W*D) mm:	1800*800*600 (400)
Ambient temperature:	20° C

Note

A lower or higher ambient temperature than 20°C leads to a reduction in the battery capacity and a reduced useful life.

Information concerning the batteries used:
Sealed, maintenance-free batteries according to DIN EN 50171 and DIN VDE 0510 are used. The useful life of the batteries is > 10 years at 20°C ambient temperature according to DIN EN 50171. (Other structural types can also be delivered on request)

User output

Depending on battery capacity and nominal operating duration

	Ah	15	24	32	42	55	80	110	160	220	270	320
max. power rating in W	1h	2008	3261	4363	5940	7128	10152	15336	22032	28728	35208	43632
max. power rating* in W	1h	1606	2609	3490	4752	5702	8122	12269	17626	22982	28166	34906
max. power rating in W	1.5h	1555	2548	3413	4600	5551	7862	11988	16761	22312	27345	33782
max. power rating* in W	1.5h	1244	2038	2730	3680	4441	6290	9590	13409	17850	21876	27026
max. power rating in W	3h	885	1490	1965	2678	3088	4428	7084	9093	12182	15724	18792
max. power rating* in W	3h	708	1192	1572	2142	2470	3542	5667	7274	9746	12579	15034
max. power rating in W	8h	367	583	799	1058	1404	2008	2916	4060	5680	6955	8294
max. power rating* in W	8h	294	466	639	846	1123	1606	2333	3248	4544	5564	6635
Battery weight (without cabinet) in kg		117	171	243	333	396	540	828	1134	1728	1976	2613
Battery cabinets		1	1	1	1	1	1	2	2	3	3	4

Note: Power rating (1.8V / cell discharge end voltage)
Power rating* = power rating taking into consideration the ageing reserve 25% according to EN 50171, point 6.12.4
We reserve the right to change the technical data by using other batteries.
Batteries frames can be delivered on request as an alternative to the battery cabinets.



Ventilation of battery areas

According to DIN EN 50272-2

Provisions

DIN EN 50272-2 and DIN VDE 0510, part 2, section 8.2

Air volume flow Q(m³/h):

Calculation of the air volume flow "Q"

(according to DIN EN 50272-2:2001, section 8.2)

Formula

For sealed Pb batteries:

$$Q = 0.05 * n * 8 * NC * 0.001$$

For closed Pb batteries:

$$Q = 0.05 * n * 20 * NC * 0.001$$

Factors

0.05 = constant

n = number of cells (with 216 V = 108 cells)

NC = nominal capacity Ah/10 h

Example

Sealed 216 V Pb battery

Nominal capacity 55Ah/10h

$$Q = 0.05 * 108 * 8 * 55 \text{ Ah} * 0.001 \gg \gg Q = 2.38 \text{ m}^3/\text{h}$$

Closed 216 Pb battery, nominal capacity 55Ah/10h

$$Q = 0.05 * 108 * 20 * 55 \text{ Ah} * 0.001 \gg \gg Q = 5.94 \text{ m}^3/\text{h}$$

Ventilation cross-section A (cm²)

Calculation of the ventilation cross-section "A"
(according to DIN EN 50272-2:2001, section 8.3)

$$\text{Formula } A = 28 * Q$$

Factors:

Q = air volume flow in m³/h

28 = constant

Example

Sealed 216V/Pb battery,

Nominal capacity 55Ah/10h

$$A = 28 * 2,38 \text{ m}^3/\text{h} \gg \gg A = 66,64 \text{ cm}^2$$

Table for common Pb batteries, 216V

nominal capacity (Ah/10h)	15	24	32	42	55	80	110	160	220	270	320
sealed Pb battery:											
Air volume flow Q (m ³ /h)	0,65	1,04	1,38	1,82	2,38	3,46	4,75	6,95	9,5	11,66	13,82
Ventilation cross-section A of the incoming and outgoing air opening (cm ²)	19	30	39	51	67	97	133	195	266	327	387
closed Pb battery:											
Air volume flow Q (m ³ /h)	19	30	39	51	67	97	133	194	266	327	387
Ventilation cross-section A of the incoming and outgoing air opening (cm ²)	46	73	97	128	167	242	334	484	666	817	968

ECS Control and monitoring system

Freely programmable microprocessor-controlled test computer as 19" insert. Fully automatic test system with display (optional print-out) of the test results of the last 4 years.

- Continuous, cyclical function monitoring of all components and the connected lights
- All operating and testing processes can be initiated by keys on the front
- Simple menu guidance through clear text communication in illuminated LCD display with 4 lines of 16 symbols
- Separate monitoring and switching device for constant operation / stand-by operation
- Manual / automatic triggering of the annual operating duration test
- LED displays of all important operating states
- Main switch ON / OFF with LED display
- Numeric password to avoid unauthorised access
- Battery data safeguarding for at least 10 years

Designed with:

RS232 interface for convenient programming, reading of system configuration and archiving of the test books / statistics according to DIN VDE 0108-100 by means of workspace software.



Requirements of the ECS control and monitoring system

High requirements of reliability and availability are placed on security lighting systems. The tests required in DIN VDE 0108-100 must be respected and regularly documented in test books that facilitate control over 4 years. For the user and operator this means a high degree of responsibility and, in case of manual implementation, considerable staff and costs resources.

These staff-intensive tests are not always carried out regularly and with the appropriate care.

Test books are generally neglected or not kept.

With the "ECS" monitoring system, all tests and controls are carried out fully automatically and regularly and then stored in the microprocessor. The highest level of operational security and considerable saving of costs in comparison with the manual, staff-intensive control are thus achieved.

In addition, simple reading of the electronic test books and the system configuration is possible at any time through the serial PC interface and printer interface.

ECS control and monitoring system

Displays

- operating and malfunction information in clear text
- important operating states additionally through LED

End current circuit allocation

- constant light and stand-by light
- light switch position interrogation / light requirement circuit
- individual light monitoring / current circuit monitoring
- staircase timed light circuit

Emergency light configuration

- time-controlled emergency light blocking
- time-controlled constant light operating times
- testable deep depletion protection
- delayed network reconnection 0 – 20 min., separate for constant light and stand-by light
- manual reconnection
- modified stand-by light

Reports and displays with separate LED display

- system on / off, blocked, impaired, battery operation
- charging malfunction, deep depletion, ISO error (checkable)
- function test, operating duration test
- network control for each phase >critical circuit<

Function and command input

- automatic time switching summer / winter
- time of automatic function test (daily / weekly)
- time of automatic operating duration test (yearly)
- acoustic message on / off
- menu guidance: German / English

Electronic test book according to DIN VDE 0108-100

- storage of all events > 4 years
- interrogation in clear text via display

Software prepared for incorporation of options such as:

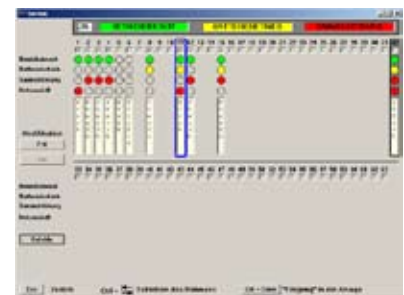
- group data processing
- interface for sub-distributors
- output of the stored data via printer
- interfaces central computer, process management systems

Printer menu

- events (desired time period from ... until ...)
- statistics (number of constant operation / standby operation network malfunctions) etc.
- system configuration (print-out of project-specific settings such as operating types (constant operation / stand-by operation), constant operation times,

Optional: workspace software

- software for operation and monitoring as well as control and programming of all device parameters
- reading and archiving of the electronic test books
- read-in and read-out of the unit configuration
- formulation of system-related settings / programming
- free text input for device, current circuit and light designation
- formulation of system-specific documentation



Bus-controlled network monitoring device

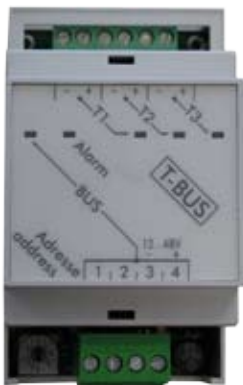


Bus-controlled three-phase monitoring device with the possibility of target location input (e.g. UV kitchen). Connection to the RS-485 system bus by means of cable
 IY(ST)4x2x0.8mm
 Or
 CAT 5

(When using IY(ST)Y 4x2x0.8 mm, please twist 2 conductors in order to increase the cross-section to min. 1.6mm².)

Type: 3U BUS

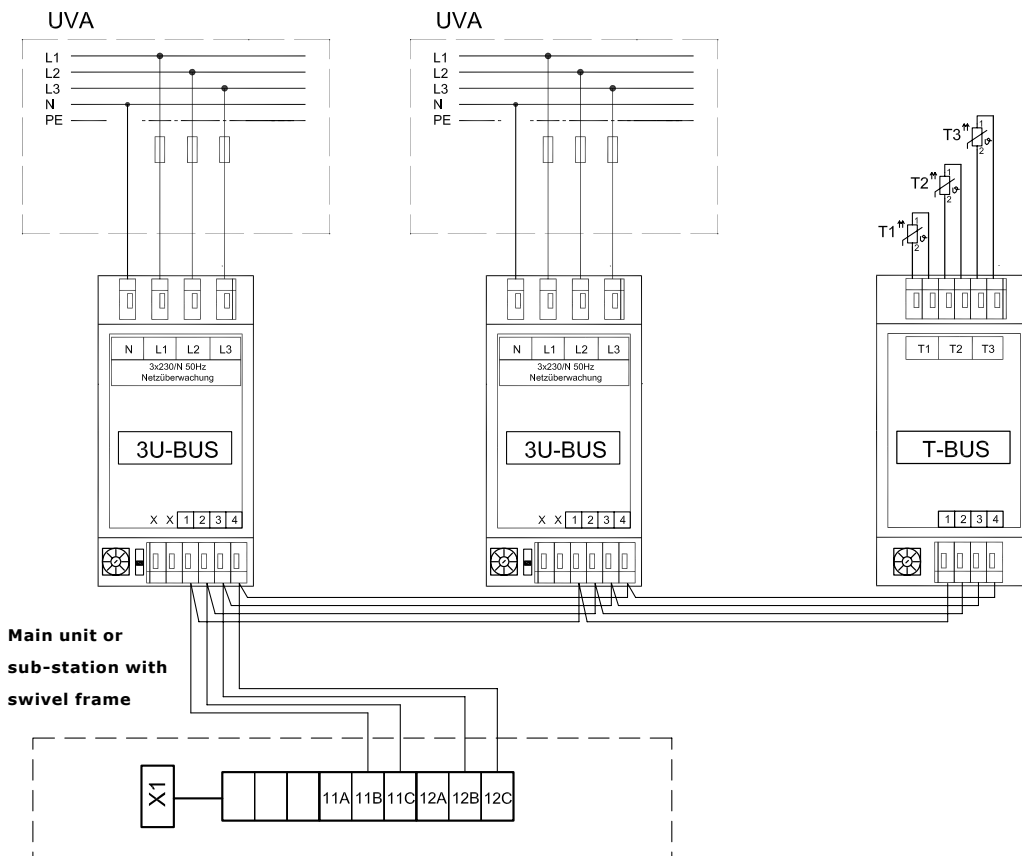
Bus-controlled temperature monitoring devices



Bus-controlled temperature monitoring devices with the possibility of monitoring 3 temperature values. Connection to the RS-485 system bus by means of
 Cable
 IY(ST)Y 4x2x0.8mm
 Or
 CAT 5

(When using IY(ST)Y 4x2x0.8 mm, please twist 2 conductors in order to increase the cross-section to min. 1.6mm².)

Type: T-BUS



FSU – Escape route scenario changeover system

This system allows, in association with the ILS (intelligent light control) light component, different escape route scenarios and operating scenarios to be programmed. Up to 20 lights / light components can be controlled within a current circuit via 44 possible switch inputs. Within a switch input, 112 external potential-free or potential-loaded switch inputs can in turn be programmed.

Different AND or OR functions are possible.

A precondition for this system is that within a current circuit each of the 20 connected lights / light components can be connected separately in a freely programmable way in its circuit type from the central battery unit. In other words, each light can be programmed individually from the central unit.

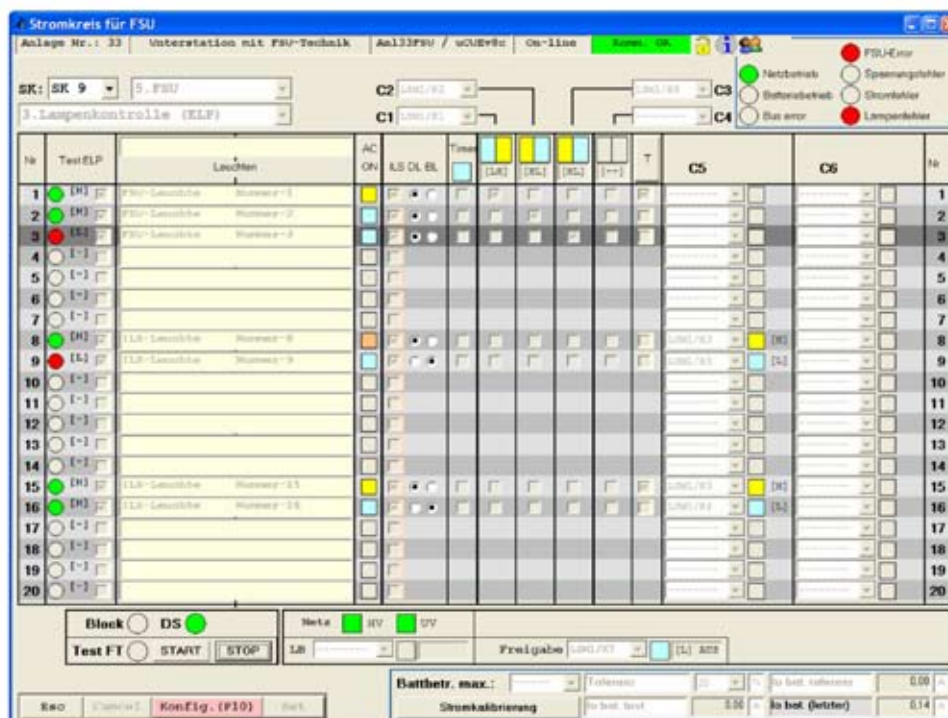
The system allows convenient programming on site / via the visualisation software also supplied.

For example the following scenarios can be programmed:

- collection point operation
- collection point partial operation I to XX
- sports hall operation
- club operation
- restaurant operation
- night operation
- exhibition operation
- trade fair operation
- cleaning operation
- etc.,

Typ: FSU-ILS

Example of FSU (escape route scenario changeover) realisation in the PC software





Central computer (ZRM)

Microprocessor-controlled monitoring centre including PC workspace software (licence for up to 16 installations, optionally up to 63 installations), for monitoring, control and programming of one or more central battery systems, sub-stations and / or group battery systems of the series FZB.



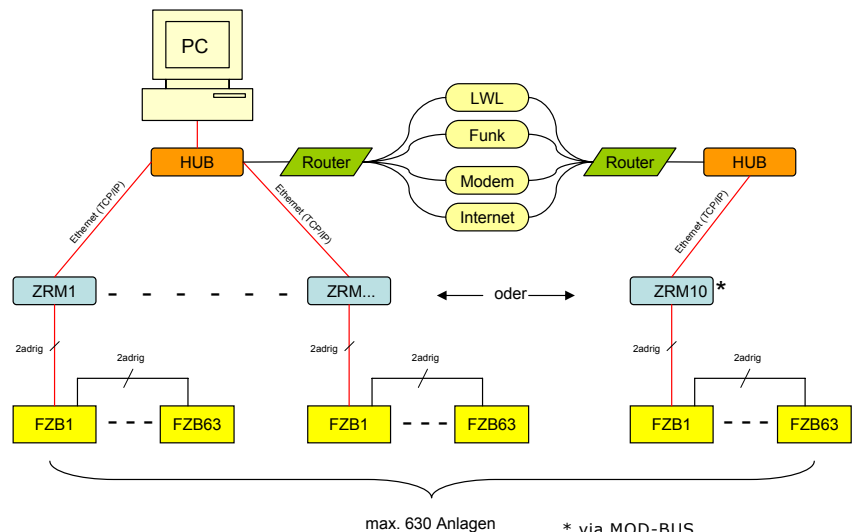
Design:

- 4-line LCD display with 4 function keys and LED
- messages: ready for operation, battery operation, test operation, collective malfunction report
- connection via 2-cable bus line for maximum 16 (optionally 63 installations)
- message optically as LED and in clear text display via illuminated display, message acoustically (summer setting)
- malfunction message contact, RS232 interface and also Centronic printer interface
- Ethernet interface
- MOD bus interface
- 24V input for emergency supply
- 24V monitoring input
- housing: plastic housing for C-rail assembly
- dimensions (H*W*D) mm: 90*160*70
- connection by means of cable: IY(ST)Y 2*2*0.8mm
max distance FZB to central computer: 1000 metres

- Type: central computer ZRM-2007

Innovation!

The latest generation of the control and monitoring system "ZRM" optionally offers, besides the functions already described, a network connection by means of TCP/IP protocol. It is now possible, in association with the optional workspace software, to monitor and control a given number of security lighting systems from a given location. The control of the systems and the keeping and evaluation of test books can thus be carried out conveniently from a central workstation. Monitoring of the systems is carried out independently of the system by means of standardised TCP/IP connection.



* via MOD-BUS
can also be connected
to external cables
systems.

GSM modem with serial interface and automatic alarm



For GSM-Netze 900/1800 MHz

Addition:

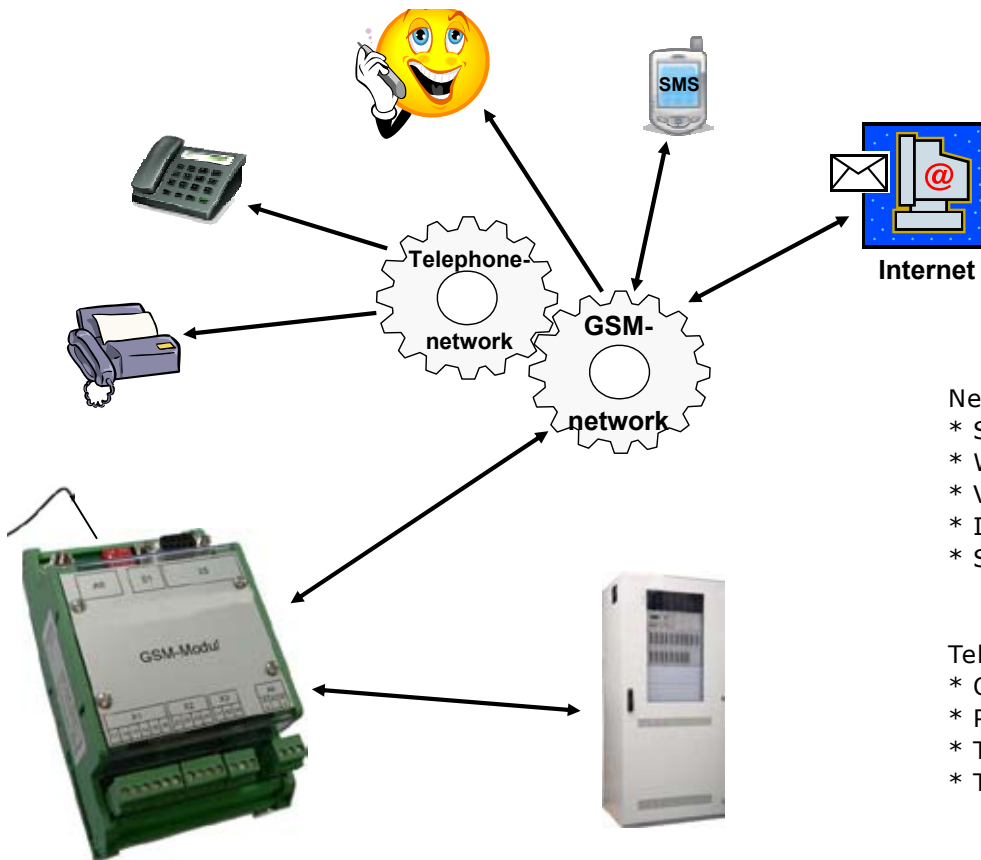
- * Digital I/O: 4 inputs, 2 outputs
- * Dual Band GSM Modem
- * Alarmierung per Fax, E-Mail, SMS, etc.

You will be directly informed when your emergency light system have any problems.

You get infos as SMS, E-Mail, Fax

Dimensions: ca. H 120 x W 75 x D 60mm
plastic housing for C-rail assembly

Type: GSM-Modul



News to:

- * SMS, FAX, Mobile phone, E-Mail
- * WEB
- * Voice output
- * Internet
- * Status news to your homepage

Teleswitching:

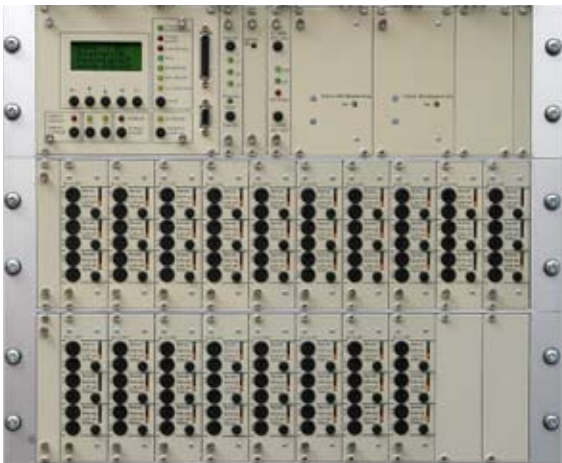
- * Over webbrowser
- * Per SMS
- * Telephone and voice
- * TCP/IP

Current circuit module: UM 3x4A

Optionally with ILS technology



Freely programmable 19" end current circuit components. Individual switching for each end current circuit with VDE-compliant (VDE: Association of Electrical Engineers) 2-pole front-side fuse protection. LED display for operation, malfunction (e.g. fuse failure, current or light error), light on (end current circuit mains / battery active). Status key for targeted and convenient display of system and programming statuses in LCD display of the ECS monitoring computer. Detailed display of the cause of the malfunction with individual light or current circuit monitoring.



Programmable monitoring options

Function monitoring:

- voltage monitoring for recognition of fuse failures and malfunctions in the end current circuit module

Current monitoring:

- self-calibrating load current and voltage monitoring
- for recognition of lighting means and fuse failures, and also
- malfunctions in the end current circuit module

Individual light monitoring:

- individual monitoring by means of address component in the respective light
- without additional data line
- voltage monitoring for recognition of fuse failures and malfunctions in the end current circuit module

Programmable switching functions:

- constant or stand-by operation
- light switch position interrogation for common switching of the security lights in mains operation
- light requirement circuit for common switching of the security lights in mains and battery operation
- staircase circuit with programming for mains and / or battery operation
- timer circuit

ILS-technology

A mixed operation with constant and stand-by light, as well as connected light in a current circuit is possible at any time in association with the light component ADR 20-ILS (see also page 25). The respective programming is carried out via the network supply line in association with the ECS control and monitoring system or the super-ordinate software from the work station.

Data UM 3x4A-ILS

For each current circuit module:	3 end current circuits
Nominal current load:	3x4 A
Fuse protection:	2x6,3 A
Overload display:	Nominal current > 4 A
Current monitoring:	Display of the load current for each end current circuit
Type:	UM 3x4A (standard) UM 3x4A-ILS

General information for monitoring emergency signs and security lighting

(Individual recognition and / or current circuit monitoring)

Current regulatory provisions refer to the necessary functional capability at any time of the emergency signs and security lighting. For this reason, regular tests of all security lights are compulsorily prescribed. Recognition gives rise to problems particularly in the case of lights in stand-by operation. It is thus indispensable for the lights to be checked individually at least once weekly.

These time-consuming checks are, however, only carried out regularly and properly in rare cases. Defective checks considerably jeopardise the safety of persons in case of network failures and in emergencies.

This problem is solved by automatic individual light or current circuit monitoring by means of systems technology.

Individual light monitoring:

In association with the address component in the respective light, the targeted monitoring and interrogation of up to 20 lights per end current circuit is carried out via the mains supply line without a further line. The testing of all security and emergency sign lights is carried out fully automatically and without staff resources. For each automatic or manual test and in all cases of network failure, the security and emergency sign lights, including the electrical cable to the light, are checked separately one after the other. The result of the interrogation is displayed in clear text in the ECS control and monitoring device and stored.

Current circuit monitoring:

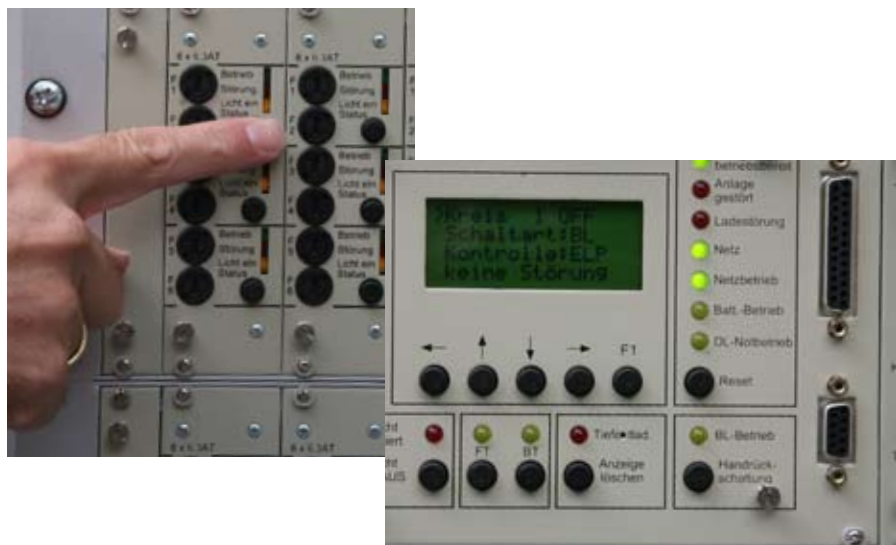
For current circuit monitoring, after start-up or after a change in the end current circuit use, the exact load current for each end current circuit is measured and stored. The stored values are checked in each automatic or manual function test. In case of a lighting means failure and the reduced current consumption thereby resulting, there is a malfunction message. An error tolerance input can be freely set for each individual current circuit. The results of the end current circuit test are displayed in the ECS control and monitoring device and stored.

Innovation

Status key

Convenient and targeted display of the results and system statuses through a status key for each end current circuit.

No laborious menu or operational process.



Charging component (LBG) 1,25/10A

The primary-switched charging component in 19" technology works in its basic function independently from the microprocessor and thus ensures reliable battery charging even without a control component. The charging components can optionally be switched in parallel.

Higher charging currents are thereby achieved and at the same time higher security through the redundant charging structure.

- Primary-switched charging component with IU curve according to DIN 41773
- Automated charging for more rapid recharging
- Curve I (constant charge) indicated by green LED
- Curve II (strong charge) indicated by yellow LED
- **Temperature-dependent charge regulation for quicker, careful recharging under different temperature conditions.**

In association with the ECS control and monitoring device the following monitoring and display functions are fulfilled and the following errors are recognised and reported:

Interruption in the charging current circuit

- Failure of the charging device although mains available
- Asymmetry of the battery, defective battery
- Overcharging with safety shutdown and manual reconnection

Charging voltage: 2.27/2.40V/Z**

Charging current: 1.25A / 10A

Type: LBG 1.25
LBG 10

* In case of LBG 10, possible as standard up to 40 A.
Optionally greater charging currents on request

** Depending upon the battery used



Type: LBG 1,25A

Type: LBG 10 - 40A



Multi-function interrogation module MFA8) LSM

With each 8 input contacts (potential-free or with 230 V AC). Freely programmable assignment to the end current circuits / lights and also multiple assignment for following operating types:

- Common switching of general and security lights in mains operation
- Common switching of general and security lights in mains and battery operation
- Area-based activation for stand-by operation, constant operation
- Area-based blocking for stand-by operation, constant operation
- Light switch position and light requirement circuit
- UV-failure recognition with area-based activation of the associated end current circuits
- Central control system (ZLT) for freely programmable end current circuits
- Timer control for freely programmable end current circuits

Assembly

- on C-rail in security light unit
- optional incorporation into on-site distribution possible

Type: LSM 24 (potential-free)

Type: LSM 230 (with 230 V AC input)



Dimensions:

Height: 90mm

Width: 100mm = 6TE



Staircase circuit module - TZA

- With 4 separate key circuits
- Time-controlled connection and disconnection of freely programmable end current circuits in mains and / or battery operation via illuminated keys
- Supply to light keys via the TZA module
- With additional contact for control of the general lighting
- Freely programmable setting time from 0.5 to 15 minutes
- Glow lamp charge per circuit max. 50 mA
- LED operation display for each staircase automated unit
- Connection possibility for 2-wire or 3-wire technology

Assembly

- On C-rail in security light unit
- Optional incorporation into on-site distribution possible

Type: TZA



Dimensions:

Height: 90mm

Width: 160mm = 9TE

Central control (ZLT) module

For data transmission to the building control systems
The potential separation is achieved through relay groups
8 messages and 4 commands are transmitted

Messages

- system ready for operation, mains operation, battery operation, mains failure
- collective malfunction, charging malfunction, deep depletion, ISO error

Commands

- function test ON/OFF, operating duration test ON/OFF
- system ON/OFF, manual reconnection

Type: Central control (ZLT)



Sub-station FZB-UVS

Autonomously working sub-distributor for decentralised supply of emergency signs and security lights
Independent monitoring and function tests through integrated ECS test computer (convenient dialogue, independently of the main station).

Monitoring of the AC riser and UVA design up to 60 light output circuits of 4 A.

Wall-mounted / free-standing housing with or without swivel frame. For basic equipment, structure and options, see main station: FZB

Can optionally be delivered in E30/E90 housing

Function, operation and displays identical to the test system of the main station

Dimensions: 1200*600*400mm (wall-mounted housing)

Type: FZB-UVS 15

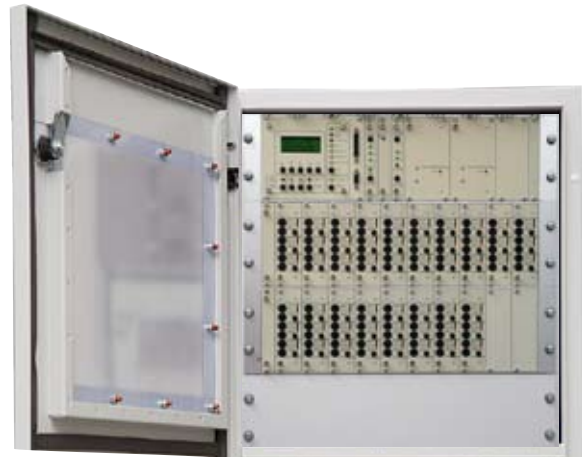
Type: FZB-UVS 30

Type: FZB-UVS 45

Type: FZB-UVS 60

Free-standing sub-stations on request

Dimensions: 1800*800*600mm



Sub-station FZB-UVS 6

Autonomously working sub-distributor for decentralised supply of emergency signs and security lights
Designed with up to 6 light output circuits of 4 A.

For basic equipment, structure and options, see main station: FZB

Can optionally be delivered in E30/E90 housing.

Function, operation and displays identical to the test system of the main station.

Dimensions: 400*400*215mm

Type: FZB-UVS 6



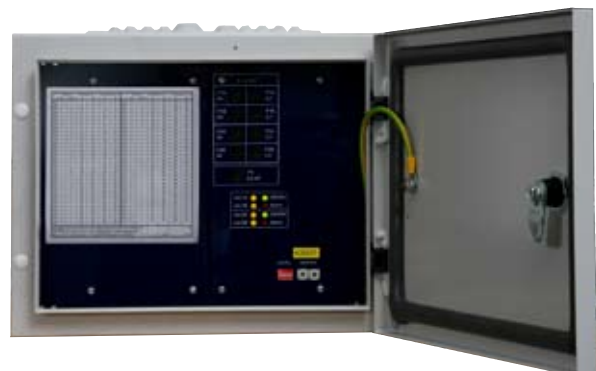
Sub-station FZB-UVS 4

Miniature sub-station for use in relation to fire compartments. 2 x 2 current circuits freely programmable in pairs. Current circuit and individual light monitoring in series. 2 digital inputs for free programming of the end current circuits in mains and / or battery operation. Input of critical circuit with free programming of circuit association in whole system. Load power max. 2 x 750 W

Can optionally be delivered in E30/E90 housing

Dimensions: 260*333*106 mm.

Type: FZB-UVS 4

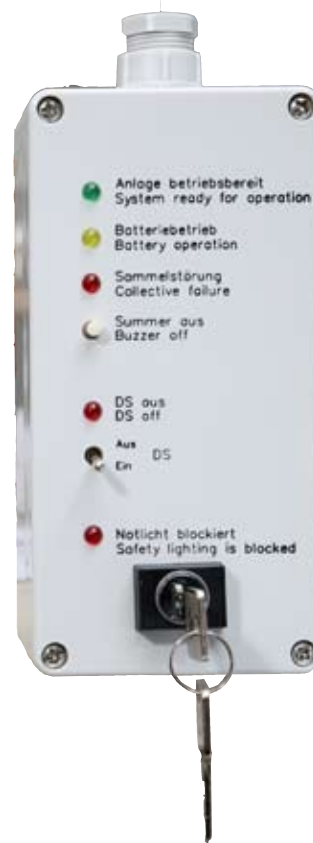


Indication board

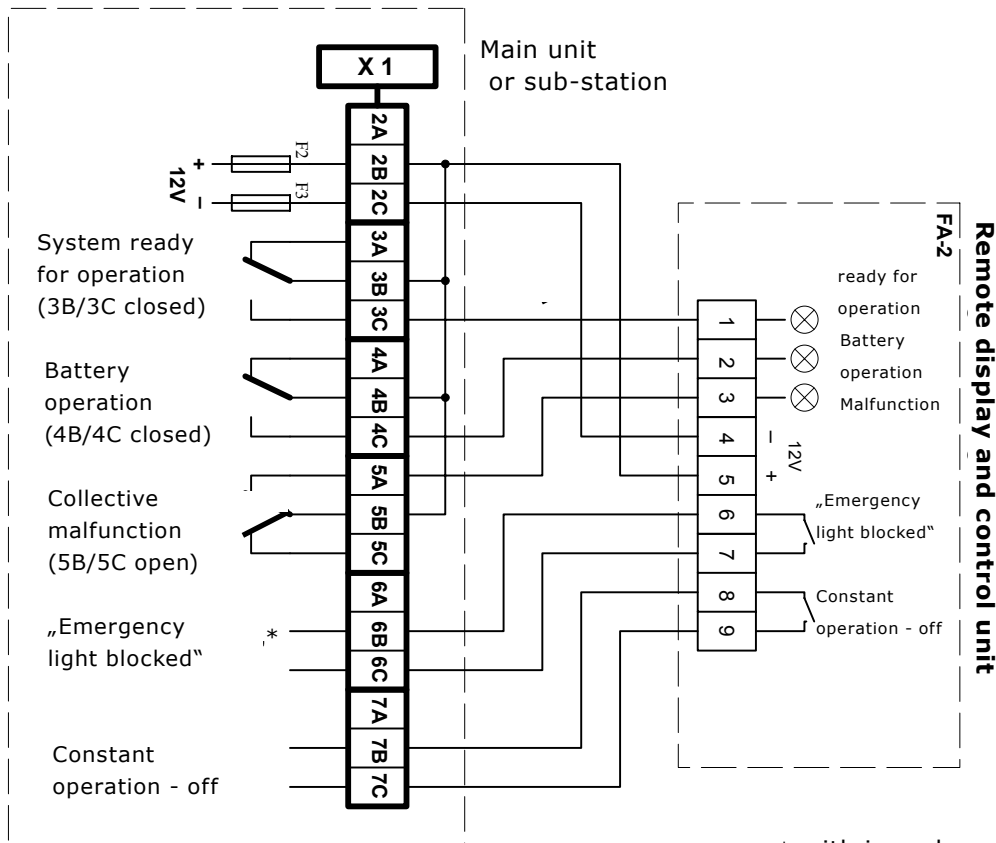
Acoustic and optical indication of:

- system ready for operation
- battery operation
- collective malfunction
- emergency light blocked

Toggle switch:	Constant light on/off
Key-operated switch:	Remote blocking of the system
Housing:	plastic
Assembly:	Wall-mounted
Protection type:	IP40
Protection class:	II
Dimensions (H*W*D) mm:	160*80*60
Connection by cable:	IY (ST)Y 6*2*0.8 mm
Type:	MTG-FZB



Heading: Connection to remote display (MTG)



ADR20 light component

Light monitoring component for individual light monitoring with address switch (up to 20 light addresses)

Technical Data ADR20

Input voltage:

AC: 230V (+10%/-15%)

DC: 216V (175-275V)

Design via double terminals

Output to light

Power rating 4-120VA

Mechanical structure

Housing:	Plastic
Assembly:	Light incorporation
Protection Type:	IP20
Protection class:	II
Dimensions (L*W*D)mm:	95*40*32
Ambient temperatura:	-10 °C to 50°C

Type: ADR20



ADR 20



ADR-S

Alternative:

Dimensions: 80*40*18mm

ADR20-D light component

Light monitoring component for individual light monitoring with address switch (up to 20 light addresses)

Monitoring in AC mains operation in the test phase with, e.g., a diesel unit as a supply source. (Central system is not operated with a battery in emergencies, but instead with a diesel unit or a second secured network).

Technical Data ADR20-D

Input voltage:

AC: 230V (+10%/-15%)

DC: 216V (175-275V)

Design via double terminals

Output to light

Power rating 4-120VA

Mechanical structure

Housing:	Plastic
Assembly:	Light incorporation
Protection Type:	IP20
Protection class:	II
Dimensions	95*40*32
Ambient temperatura:	-10 °C to 50°C

Type: ADR20-D



ADR 20-D

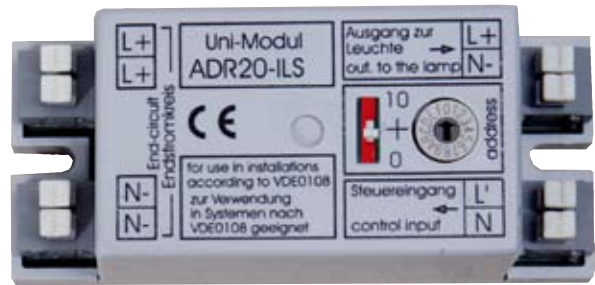
ADR20-ILS light component

Freely programmable light monitoring component. Each component can be programmed within a current circuit as:

- a constant light
- a stand-by light or as
- a connected light.

The programming is carried out conveniently from the security light unit. In addition, the component is provided with a L' input in order to realise the connected light function on site. The L' input is to be seen as an OR function for programming.

In addition, various control inputs of the LSM (MFA8) module can be assigned in a targeted way to one or more components in the current circuit. The light component ADR20-ILS is already provided as standard with a light monitoring function, i.e. individual light monitoring with monitoring of the lighting means.



Alternatively also as encapsulated version (EX design)

Technical Data ADR20-ILS

Input voltage:

AC: 230V (+10%/-15%)

DC: 216V (175-275V)

Design via double terminals

Control input L' (local connection)

AC 230V (+10%/-15%), 50-60 Hz

Output to light

Power rating 4-120VA

Mechanical structure

Housing:	Plastic
Assembly:	Light incorporation
Protection Type:	IP20
Protection class:	II
Dimensions (L*W*D)mm:	95*40*32
Ambient temperatura:	-10 °C to 50°C

Type: ADR20-ILS

Electronic ballast with incorporated monitoring component



EVG13W-20-ILS

With incorporated electronic ballast (4-13 Watt)

Dimensions : 140*40*32

Type: EVG13W-20-ILS

ADR20-ILS light component -D

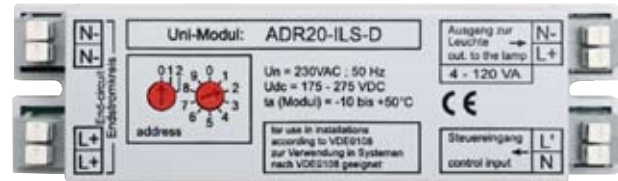
Light monitoring component for individual light monitoring with address switch (up to 20 light addresses). Monitoring in AC mains operation in the test phase with e.g. a diesel unit as a supply source. (Central system is not operated with a battery in emergencies, but instead with a diesel unit or with a second secured network.)

Freely programmable light monitoring component. Each component can be programmed within a current circuit as:

- a constant light
- a stand-by light or as
- a connected light.

The programming is carried out conveniently from the security light unit. In addition, the component is provided with a L' input, in order to realise the connected light function on site. The L' input is to be seen as an OR function for programming.

In addition, various control inputs of the LSM (MFA8) module can be assigned in a targeted way to one or more components in the current circuit. The light component ADR20-ILS is already equipped as standard with a light monitoring function, i.e. individual light monitoring with monitoring of the lighting means



Technical Data ADR20-ILS-D

Input voltage:

AC: 230V (+10%/-15%)

Design via double terminals

Control input L' (local connection)

AC 230V (+10%/-15%), 50-60 Hz

Output to light

Power rating 4-120VA

Mechanical structure

Housing:	Plastic
Assembly:	Light incorporation
Protection Type:	IP20
Protection class:	II
Dimensions (L*W*D)mm:	140*40*32
Ambient temperature:	-10 °C to 50°C

Type: ADR20-ILS-D

ILS

(Intelligent Light Control)

Mixed operation in light circuit)

In order to facilitate the integration of the emergency lighting into the general lighting, freely programmable security lighting systems are increasingly used. In this generation of systems, lights can be operated as a constant light, a stand-by light as well as a connected light in a common current circuit. This is achieved by programming the light components (ILS) conveniently from the security light unit.

Up to 20 lights can be programmed within a current circuit as desired into the desired circuit type.

Example:

Current circuit with ILS technology

Light 1/1:	Emergency sign light, circuit: constant light via constant operation clock in HVS (main distributor of safety current supply)
Light 1/2:	Security light, circuit: connected light via L' input
Light 1/3:	Security light, circuit: stand-by light
Light 1/4:	Emergency sign light, circuit: constant light
Light 1/5:	Security light, circuit: connected light via LSM – input No. 14 in HVS (main distributor of safety current supply)
Light 1/6:	Security light, circuit: connected light via LSM
Light 1/7:	Emergency sign light, circuit: constant light via constant operation - time in HVS (main distributor of safety current supply)

FZB central battery system in fire protection housing

Design E90 – I90 – F90 (according to DIN 4102)



Modular, combinable and extendable

- own separate fire protection housing
- own separate ventilation system
- own optimised dissipation / convection



FZB Central battery system in fire protection housing

Design E90-I90-F90 (according to DIN 4102)

Simple, quick, cost-saving and simple ...

- incorporation at location of assembly
- through separate device and battery cabinets



Battery cabinet

- using optimised dimensions, the incorporation of the battery is very simple and assembly-friendly
- further housings can be used in case of higher power requirements
- modern ventilation systems with corresponding consideration of the air volume according to DIN EN 50272-2 are used.

Device cabinet

- security light unit in high-quality, modern 19" technology
- 19" component carrier on swivel frame
- thus compact and functional design
- charging components in temperature-regulated design
- redundant charging structure for increased security possible
- modern ventilation systems in consideration of the dissipation occurring

"Housing in housing" design

Security light unit in own sheet steel housing, thus simple delivery of the fire protection housing and subsequent incorporation of the security light unit.

Removable plinth panel

Simple transport of the fire protection housing through removable plinth panel and lowering by means of lifting truck.

High-quality housing structure

“Housing in housing” design

Security light unit in own sheet steel housing, thus simple delivery of the fire protection housing and subsequent incorporation of the security light unit.

Removable plinth panel

Simple transport of the fire protection housing through removable plinth panel and lowering by means of lifting truck.



The safety concept

- highest quality
- greatest functionality

Object bands

- externally lying object bands, maintenance-free ball bearing technology, opening angle 180°, load bearing capacity 100 kg, releasable holding bolt during door disassembly
- can optionally be delivered with inner lying object bands

Fire protection

Secures the fire protection in the door compartment region through continuous fire and temperature barrier in the frame and door seam.

Additional protection

Fire-side safety underside engagement for increased fire protection and also protection against sabotage and theft in case of external force.

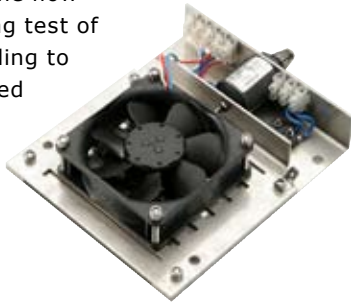
Shielding

Secure shielding in case of a fire in relation to the spread of fire and smoke between the device and battery cabinet through a tested cable fire shield



Ventilation system

- Ventilation system with cold smoke triggering
- The closure device is triggered as soon as a detector (e.g. smoke detector) detects smoke (a fire).
- The status of the ventilation slide valves (open during operation and closed upon triggering) is available as an indicator contact
- The compulsory ventilation takes place by means of long-life Pabst ventilator motors, tailored to the required air volume flow
- The proper functioning test of the ventilation according to DIN VDE can be carried out via the test keys of the control unit



Fire alarm function



The fire alarm is effected by means of automatic detectors (e.g. owned or optionally external smoke alarms). In case of smoke development the supply voltage for the lifting magnets (closure device) and fans is immediately interrupted via the built-in control. The fire protection slide valve is thereby automatically closed and the ventilators are switched off. The control unit reports the status. In addition a malfunction indication contact reports the status to the on-site engineers.

Group-/ Midget-battery-syteme

- **FZB 4-24**

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- **FZB 6-48**

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- **FZB 2-48-ILS**

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FZB 4-24

Group battery system according to DIN VDE 0108-100

The security lighting system in its most compact form

- use according to fire compartments
- high operational reliability
- monitoring of each light
- can be interconnected
- freely programmable

Fully monitored, microprocessor-controlled compact system for 1-hour or 3-hour operation according to DIN VDE 0108-100. Supplies up to 80 emergency signs or security lights with electronic ballast. Serial current circuit and / or individual light monitoring.

Advantages

- reliable, economical, environmentally friendly (Pb accumulator)
- unbeatable price / performance level in comparison with individual battery lights
- economic system for central or decentralised installation
- supply and fully automatic monitoring of max. 80 lights (max. 4 circuits)

Technical data

Network connection: 230 V AC +10/-15%, 50/60 Hz

Battery voltage: 24 V DC

Charging current: 2 A, +/- 1%

Output voltage: 230 V AC / 230 V DC

Permanent charging voltage: 2.27 V/Z

Charging automation: 2.40 V/Z

Charging curve: I-U

User output max. 400 W

Sheet steel wall-mounted housing (combi-housing)

Protection class I

Electronic component IP54

Battery component IP 20

Cable introduction: from above via flange plate

Dimensions: approx.

Height 800 mm

Width 400 mm

Depth 300 mm

Door stop: left

Can optionally also be delivered in E30/E90 housing



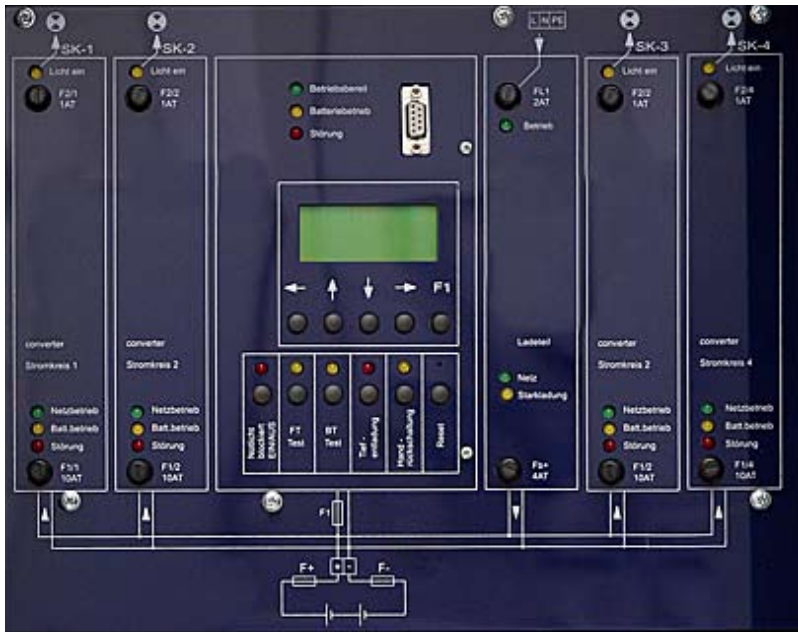
Microprocessor unit

- 4-line LC display in clear text indication
- 6 function keys for the most important commands
- 5 menu guiding keys for simple operation
- multilingual menu guidance
- automatic summer / winter time switchover
- automatic and manual function test
- automatic and manual battery test
- circuit type freely programmable
- RS 232 interface incl. PC software
- Indication contacts according to DIN VDE 0108-100
- Statistical display
- Electronic test book > 4 years
- DL/BL subsequent running time programmable
- Constant connection switch clock integrated
- Interconnection of up to 63 systems

Innovative series equipment

- 4 end current circuits of 100 W; freely programmable permanent connection / stand-by connection / switched light
- RS232 - PC - interface incl. software (ind. licence)
- Interface for central computer
- Connection of a visualisation system (PC workspace)
- Target location input for each light / circuit / system (32 symbols)
- Individual light monit. (addressing) programmable
- Current circuit monitoring (self-calibrating) programmable
- Function / security monitoring for each end current circuit
- Electronic test book > 4 years
- 6-fold LSM 230 V input (light switch interrogation, 230 V AC input)
- ext. bus connection for optional components

FZB 4-24



Charging component

24 V/2.0A primary-switched
Fuse protection: mains / battery

RS232 interface

For convenient programming, reading of the system configuration and archiving of the test books / statistics according to DIN VDE 0108-100.

4 end current circuits – 100 W

Indications: mains / battery operation, malfunction, light on (voltage at output)

Fuse protection for each end current circuit for mains and battery

Optional



Indication board

Optical and acoustic indication:

- system ready for operation
- battery operation
- collective malfunction
- emergency light blocked

Key-type switch, remote blocking of the connected system.

Incorporated into plastic housing. Dimensions approx. H 120, W 80, D 55 mm.

Protection type IP 40, protection class II

Type: MTG-FZB 4-24

Workspace software

- Software for operation and monitoring, and also control and programming of all device parameters
- Reading and archiving of the electronic test books
- Reading in / out of the device configuration
- Formulation of the system-related settings or programming
- Free text input for devices, current circuit and light designation
- Formulation of the system-specific documentation



FZB 6-48

Group battery system

According to DIN VDE 0108-100

The security lighting system with IT technology in a compact form

- ILS (intelligent light control) technology
- use according to fire compartments
- high operational reliability
- monitoring of each light
- can be interconnected
- freely programmable

Fully monitored, microprocessor-controlled compact system for 1-hour or 3-hour operation according to DIN VDE 0108-100. Supplies up to 120 emergency signs or security lights with electronic ballast. Serial current circuit and / or individual light monitoring. Option: ILS technology

Advantages

- reliable, economical, environmentally friendly (Pb accumulator)
- unbeatable price / performance level in comparison with individual battery lights
- economic system for central or decentralised installation
- supply and fully automatic monitoring of max. 120 lights (max. 6 circuits)

Technical data

Network connection: 230 V AC +10/-15%, 50/60 Hz

Battery voltage: 48 V DC

Charging current: 5 A, +/- 1% (2 charging components – 2.5 A, redundant)

Output voltage: 230 V AC / 230 V DC

Constant charging voltage: 2.27 V/Z

Charging automation: 2.40 V/Z

Charging curve: I-U

User output max. 900 W

Sheet steel wall-mounted housing (combi-housing)

Protection class I

Electronic component IP54

Battery component IP 20

Cable introduction: from above via flange plate

Dimensions: approx.

Height 1200 mm

Width 600 mm

Depth 400 mm

Door stop: left

Can optionally also be delivered in E30/E90 housing



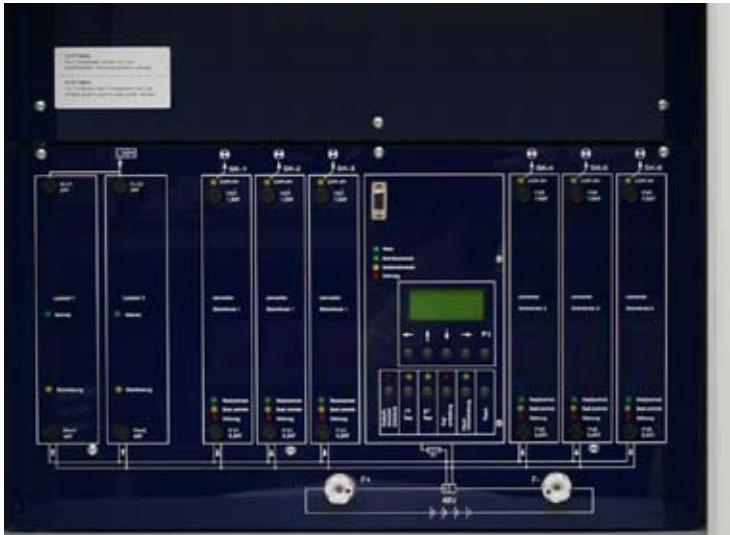
Microprocessor unit

- 4-line LC display in clear text indication
- 6 function keys for the most important commands
- 5 menu guiding keys for simple operation
- multilingual menu guidance
- automatic summer / winter time switchover
- automatic and manual function test
- automatic and manual battery test
- circuit type freely programmable
- RS 232 interface incl. PC software
- Indication contacts according to DIN VDE 0108-100
- Statistical display
- Electronic test book > 4 years
- DL/BL subsequent running time programmable
- Constant connection switch clock integrated
- Interconnection of up to 63 systems

Innovative series equipment

- ILS technology (optional)
- 6 end current circuits of 150 W; freely programmable constant connection / standby connection /switched light
- RS232 – PC – interface incl. software (ind. licence)
- Interface for central computer
- Connection of a visualisation system (PC workspace)
- Target location input for each light / circuit / system (32 symbols)
- Individual light monit. (addressing) programmable
- Current circuit monitoring (self-calibrating) programmable
- Function / security monit. for each end current circuit
- Electronic test book > 4 years
- 6-fold LSM 230 V input (light switch interrogation, 230 V AC input)
- ext. bus connection for optional components

FZB 6-48



2 redundant charging components

48 V/2.5A primary-switched
fuse protection: mains / battery

RS232 interface

For convenient programming, reading of the system configuration and archiving of the test books / statistics according to DIN VDE 0108-100.

6 end current circuits – 150 W

Indications: mains / battery operation, malfunction, light on (voltage at output)

Fuse protection for each end current circuit for mains and battery

Optional



Indication board

Optical and acoustic indication:

- system ready for operation
- battery operation
- collective malfunction
- emergency light blocked

Key-type switch, remote blocking of the connected system.

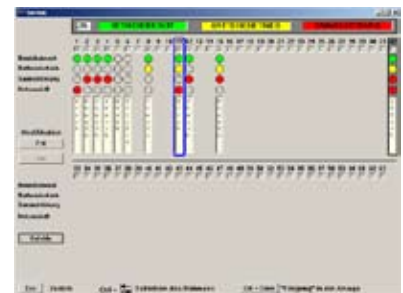
Incorporated into plastic housing. Dimensions approx. H 120, W 80, D 55 mm.

Protection type IP 40, protection class II

Type: MTG-FZB 6-48

Workspace software

- Software for operation and monitoring, and also control and programming of all device parameters
- Reading and archiving of the electronic test books
- Reading in / out of the device configuration
- Formulation of the system-related settings or programming
- Free text input for devices, current circuit and light designation
- Formulation of the system-specific documentation



FZB 2-48-ILS

**Distributed system
for the fire compartment-wise employment
According to DIN VDE 0108-100/MLAR**

The security lighting system with IT technology in a compact form

- ILS (intelligent light control) technology (Single light monitoring and mixing process in an electric circuit)
- use according to fire compartments
- high operational reliability
- monitoring of each light
- can be interconnected
- freely programmable

Fully monitored, microprocessor-controlled compact system for 1-hour or 3-hour operation according to DIN VDE 0108-100/MLAR. Supplies up to 40 emergency signs or security lights with electronic ballast.

Advantages

- no electrical operating room after MLAR necessarily
- unbeatable price / performance level in comparison with individual battery lights
- economic system for decentralised installation
- supply and fully automatic monitoring of max. 40 lights (max. 2 circuits)



Innovative series equipment

- ILS (intelligent light control) technology (Single light monitoring and mixing process in an electric circuit)
- Switching type and switching function for each light separately programmable
- 2 end current circuits of 150 W; freely programmable constant connection / standby connection /switched light
- RS232 – PC – interface incl. software (ind. licence)
- Interface for central computer
- Connection of a visualisation system (PC workspace)
- Target location input for each light / circuit / system (32 symbols)
- Function / security monit. for each end current circuit
- Electronic test book > 4 years
- 6-fold LSM 230 V input (light switch interrogation, 230 V AC input)

Technical data

Network connection: 230 V AC +10/-15%, 50/60 Hz
 Battery voltage: 48 V DC
 Charging current: 2,5 A
 Output voltage: 230 V AC / 230 V DC
 Constant charging voltage: 2.27 V/Z
 Charging automation: 2.40 V/Z
 Charging curve: I-U

User output max. 300 W

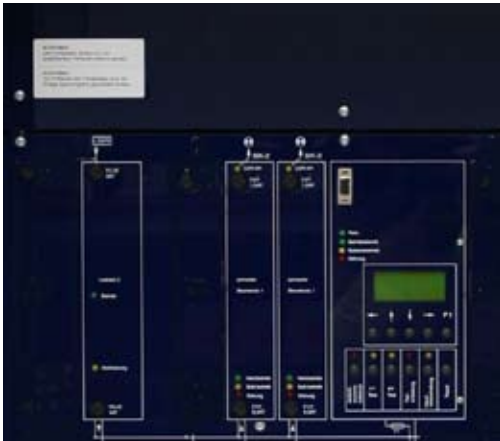
User output by Battery capacity	1h	3h
7 Ah	160 W	64 W
12 Ah	266 W	106 W
18 Ah	300 W	160 W
36 Ah * (2x 18 Ah)	-	320 W

Sheet steel wall-mounted housing (combi-housing)
 Protection class I
 Electronic component IP54
 Battery component IP 20
 Cable introduction: from above

Dimensions: approx.
 Height: 800 mm (*950mm)
 Width: 400 mm
 Depth: 200 mm

Door stop: left

FZB 2-48-ILS



Microprocessor unit

- 4-line LC display in clear text indication
- 6 function keys for the most important commands
- 5 menu guiding keys for simple operation
- multilingual menu guidance
- automatic summer / winter time switchover
- automatic and manual function test
- automatic and manual battery test
- circuit type freely programmable
- RS 232 interface incl. PC software
- Indication contacts according to DIN VDE 0108-100
- Statistical display
- Electronic test book > 4 years
- DL/BL subsequent running time programmable
- Constant connection switch clock integrated

Optional

Central-computer ZRM/Tableau

Microprocessor-controlled monitoring centre including PC workspace software (licence for up to 16 installations, optionally up to 63 installations), for monitoring, control and programming of one or more central battery systems, sub-stations and / or group battery systems of the series FZB.

In connection with VISU software can be supervised up to 630 plants.

Design:

- 4-line LCD display with 4 function keys and LED
- messages: ready for operation, battery operation, test operation, collective malfunction report
- connection via 2-cable bus line for maximum 16 (optionally 63 installations)
- message optically as LED and in clear text display via illuminated display, message acoustically (summer setting)
- malfunction message contact, RS232 interface and also Centronic printer interface
- Ethernet interface
- MOD bus interface
- 24V input for emergency supply
- 24V monitoring input
- housing: plastic housing for C-rail assembly
- dimensions (H*W*D) mm: 90*160*70
- connection by means of cable: IY(ST)Y 2*2*0.8mm max distance FZB to central computer: 1000 metres



- Type: ZRM-IT





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