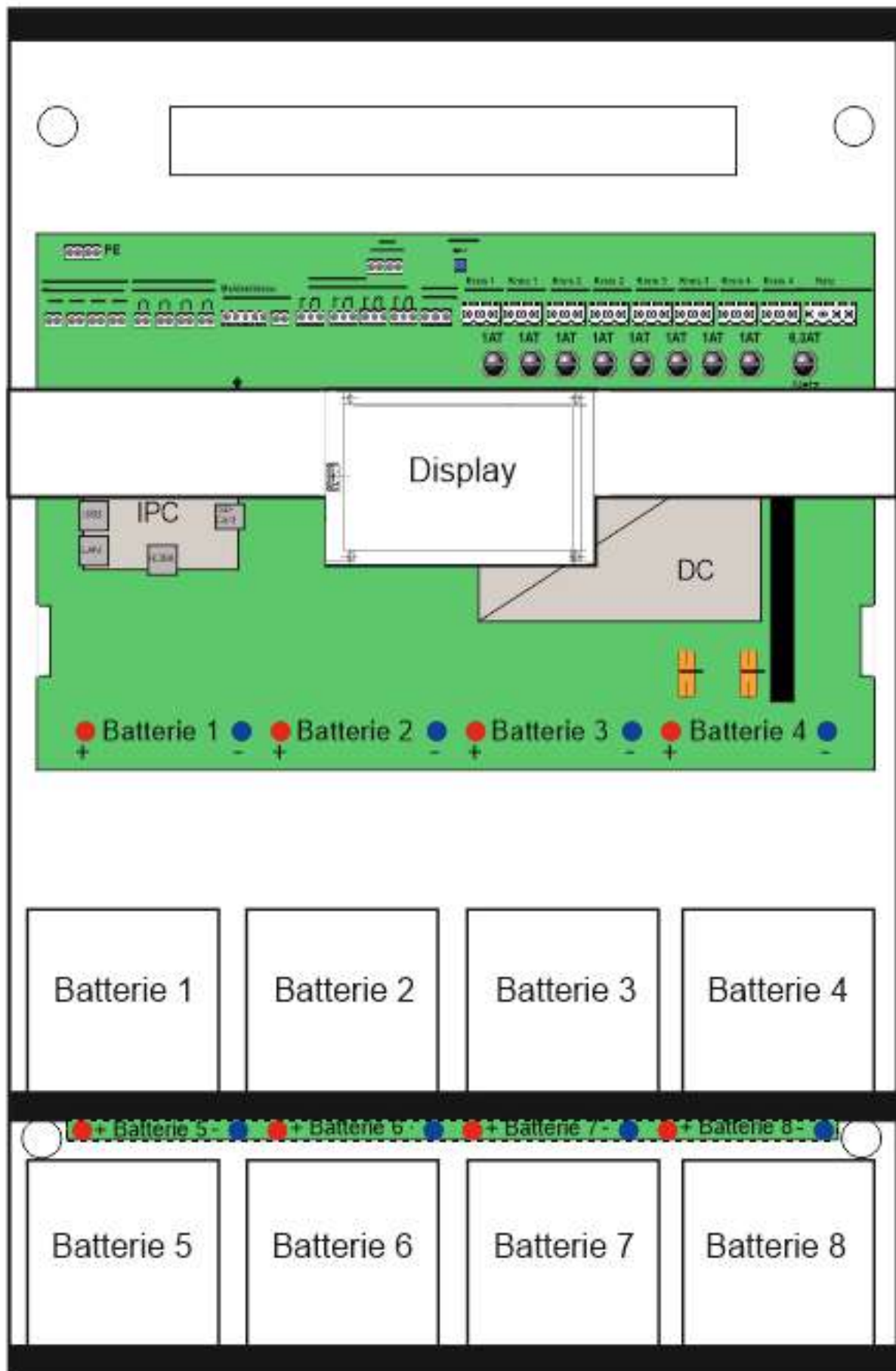




Instruction manual

LPS System





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1. General information - Purpose of the instruction manual

This instruction manual is intended to enable the intended and safe use of the system. The manual must always be available and must be ready to hand at all times. Every person who operate the system (this means: transport, preparation and installation, operation, maintenance and dismantling) has to read and apply the instruction manual. The binding guidelines, norms and laws of the operation site and country of use for safety and professional work must be followed.

Experts of manufacturers and suppliers will give the extensive informations exceed the instruction manual. All of these documents are protected by copyright laws. If not explicitly permitted it's not allowed to share, reproducing or communicate the documents as well as the contents.

2. Safety – General informations

The instruction manual is an essential assemblies of the system. The operator insured that the instruction manual is always available and that the operating personal take note of the guidelines.

The operator has to complement the manual with operating instructions due existing national rules for accident preventions and environmental protection as well as the responsibilities of supervision and obligations to report the observance for operational specifics for example to work organisation, workflows and used personal. In addition of the instruction manual of the current binding rules applicable in the country of use and the operation site, the recognized technical rules for safe and professional work must also be observed.

Only authorized and trained employees are allowed to work on the system in attention of all safety rules. Incorrect and faulty installation can result in dangers for human life and material damage. All views and pictures in the manual may vary to the delivery state.

Special- and customer-specific versions are listed and described as an attachment.

The installation may be success only according to the relevant rules and norms for electrical engineering. To this the national provisions and guidelines of the installation place and country have to be observed.

3. Explanation of symbols



Safety-relevant informations are identified with the adjoining symbols. Non-compliance failure to follow the instructions may result personal injuries or defects on the system.



Notes, marked with a green symbol, provide important informations. Please read very carefully.



This symbol draw attention to further informations.

4. Working at the construction



For safety reasons, power must be disconnected from the control cabinet before installation work. Important, if you switch off the main power supply with battery voltage the system automatically switches to the battery voltage. Battery disconnecting or switching of may only authorised in non-load condition (danger of electric arc).

When working with the battery or battery voltage there is a increased risk of injury and danger of life, so it's very important to respect the correct operation. You necessarily must read the battery manufacturer informations.

5. Liability and warranty

The manufacturer accepts no liability and warranty for damage or consequential damages caused because of:

- Incorrect use
- Non-compliance of rules for safety use
- Operation of non-approved or unsuitable assemblies on the system
- Failure installation
- Intervention in the system

6. Spare parts



Change the defect assemblies only with original spare parts. We only guarantee the full safety requirements if you use original spare parts. Guarantee-, service- and liability claims expire with unsuitable spare parts. If you don't use the original spare parts it can lead to faulty operation or not correct working systems

7. Supply, storage

Package control

Check all parts on delivery for integrity and completeness. In case of damage of packaging, open the packaging immediately. Please report every damage and missing parts immediate. Otherwise our claims against the transport company will expire.



Check completeness and transport damage on the delivery immediately. If the delivery is damaged do not accept the delivery or only under reserve.

Do only install and store the systems in closed, frost-free and dry rooms. The ambient temperature shall not be under 0°C or over 40°C.

8. Connection sequence



Please read the instruction manual before commissioning and installation. There are important informations for safety use and the maintenance of the system. In this way you protect yourself and prevent damages.

Commissioning: always connect the battery first, then the mains power.

Decommissioning:



Before disconnecting the battery and mains power switch the system non load. System blocked – see page 16 „emergency lighting blockage“
 Then disconnect the battery and the mains power.

9. Produktbeschreibung

The Low-Power-System (LPS) is a safety lighting system with up to 4 circuits. Each system can be operated up to 20 lights in different switching types. Maximum load per circuit is 120Watt. Maximum power per system is 200Watt. The output circuits can be programmed for standard operation or for mixed operation. In mixed operations are 20 light addresses per circuit possible.

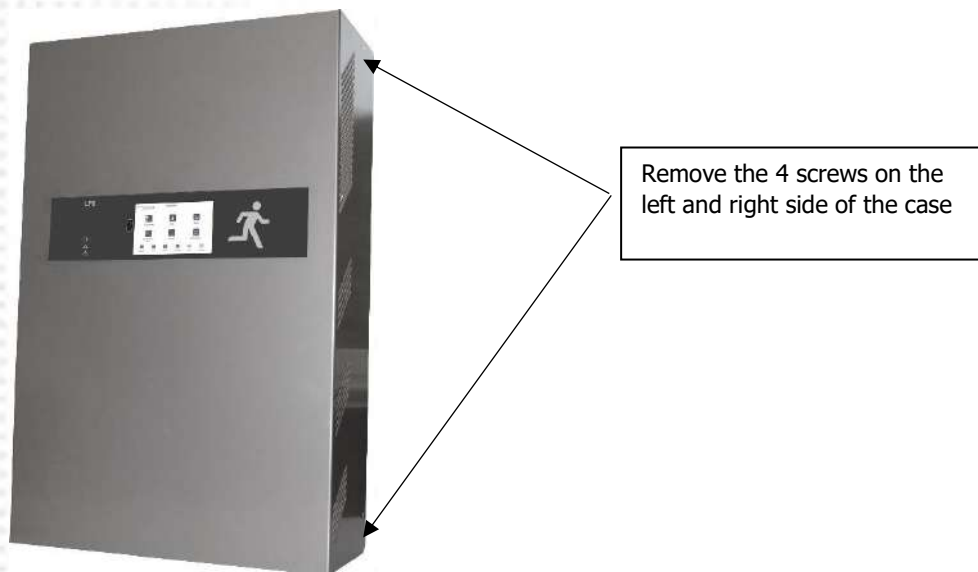
The 5 Inch Touchscreen-Display is operable with a clear display structure.

Via serially integrated USB interface a keyboard, mouse or a USB memory stick can be connected. There you can save the inspection test book. The required tests are possible at freely programmable times. The test results are saved in detail in the integrated test book and can be called up at any time.

- Intermediate circuit voltage 24V DC
- Automatic function monitoring of the system and on all the output circuits connected lights
- Connecting terminal of all modules pluggable
- 5 Inch-Touchscreen-Display
- USB 2.0 for keyboard and USB memory stick
- 4 Circuits suitable for up to 20 luminaires each
- circuits can be freely programmed
- programmable message texts for each luminaires
- Each circuit is supplied with 230V AC / DC
- The maximum power per system is 200Watt
- The distribution of the total power can be symmetrical or asymmetrical
- Maximum load per circuit is 120Watt
- 4 switching inputs freely programmable (potential free)
- 4 switching inputs freely programmable 230V AC
- manual reversion
- emergency light blockage
- integrated test book
- integrated WEB server for remote monitoring
- TCP/IP interface

10. Construction

Open the screws on the right and left side of the case so you can remove the case cover.



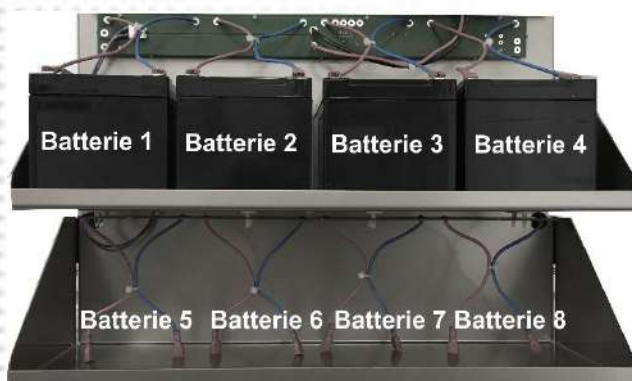
The system is a wall mounting. Please have a look, that the wall is strong enough for the system. Very important! The system has 4 fixing holes on the backside.

11. Construction and connected battery



Please check the delivered batteries and report/complain in case of mechanical damage immediately! Attention to voltage parts on the battery. Short-circuit-hazard!

Please observe the requirements of DIN VDE 0510 Part 2 and read the data sheets of the battery- manufacturers.



The battery power supplies are for batteries with AMP 6,3-plugs.

Depending on your desired output, there can be installed 2, 4, 6 or 8 battery-blocks. Please pay attention to the correct polarity, red is plus (+), and blue minus (-).



Attention:
False polarity may damage the system!



13. Connection of the mains voltage



Attention

Always check if the battery voltage is connected to the main board on the battery terminals (24V) before connecting the main power.

The 3 poles connection line can be connected up to a cross section of 2,5mm². The main voltage must be 230V +/- 5% and 50Hz.

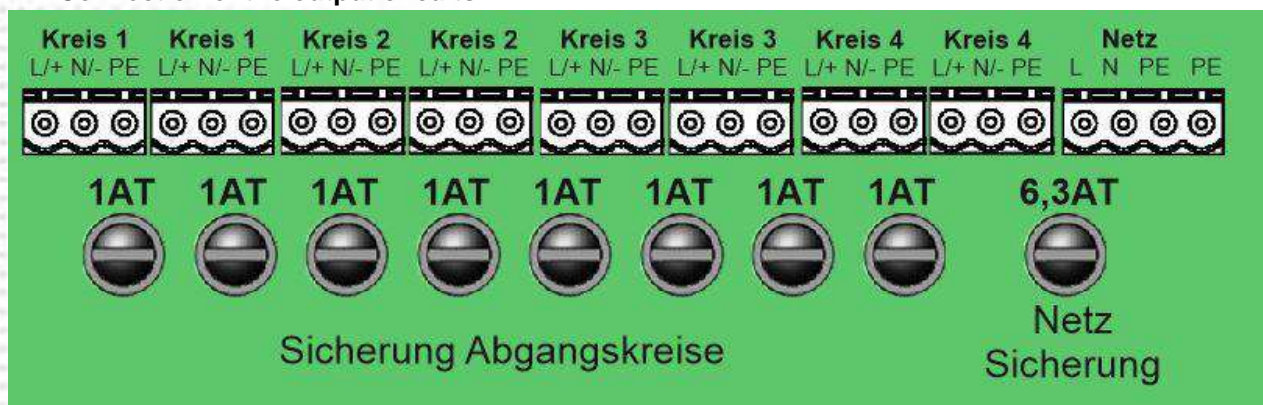
Therefore you can remove the main terminal.



Attention

Please pay attention to the correct polarity.

14. Connection of the output circuits



The output circuits, up to a cross section of 2,5 mm², can be connected to the output terminal. Inside the system the output circuits are secured with two poles each.

The terminals of the final circuits can be removed from the connection board. All output circuits are double listed.



Attention

The terminals may also carry voltage even when the system is switched off. The voltage can be AC or DC.

15. Connection of external light switches

If the general luminaires and safety lights are to be switched at the same time, the 8 separate switching inputs can be used and also programmed. Various switch inputs can be assigned to each circle or single luminaire. The CPS System supplies the connected consumers at main operation. The software programmed the function. The connection line can be connected up to a cross section of 1,5mm².

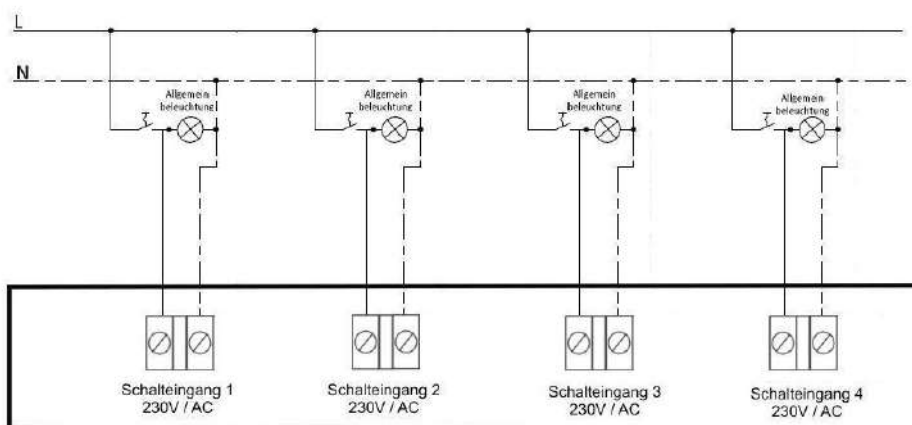
There are two types of switch inputs:

1. Switching inputs freely programmable 230V AC.
The input voltage has to be 230V+/- 10% and 50Hz.

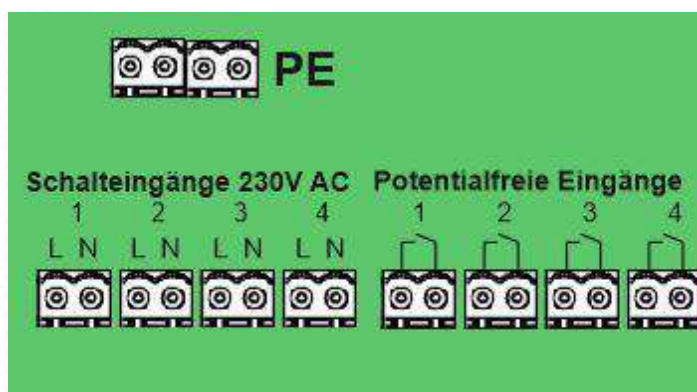
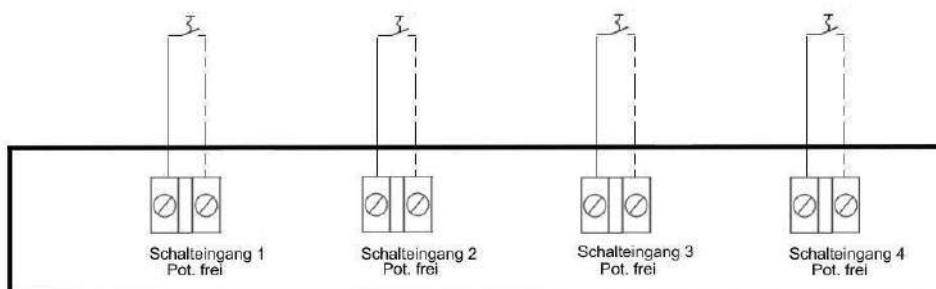


Attention

Before connecting please check the correct polarity of the external **lightswitchlines**.

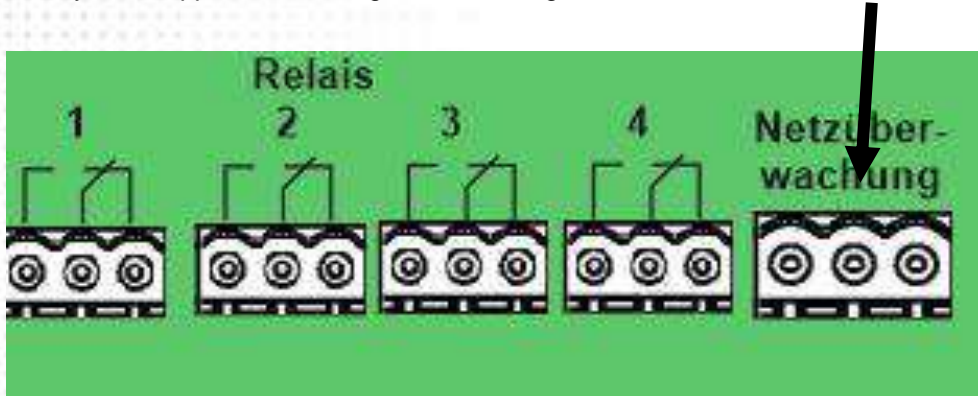


2. Switching inputs freely programmable (potential free)

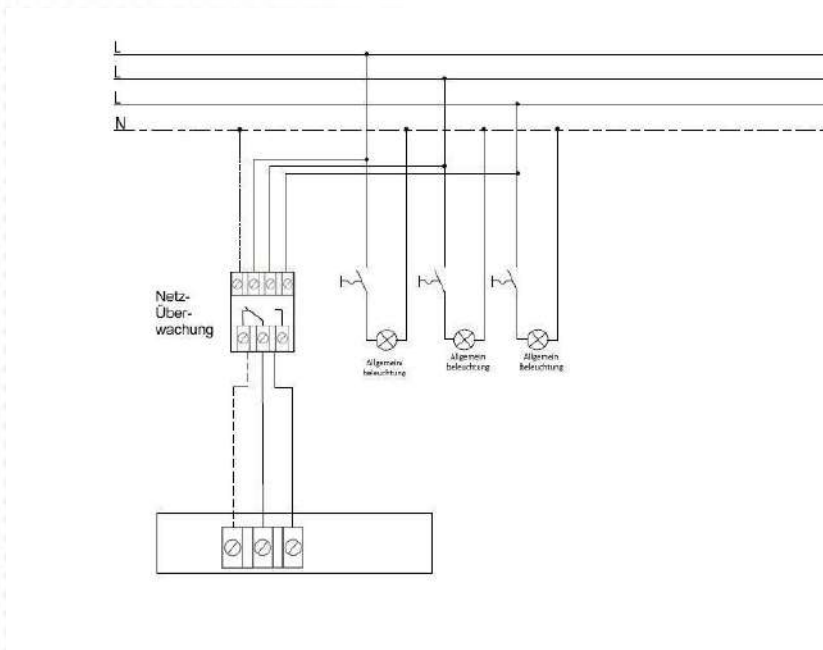


16. Connection of external voltage monitors

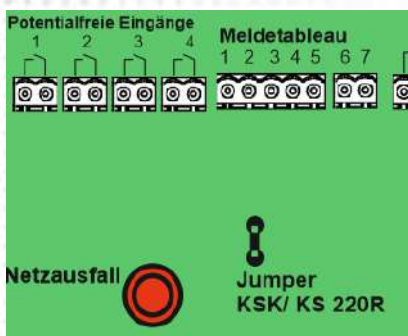
An external voltage monitor can be connected up to a cross section of 2,5mm² at the terminals. The system supplies 24V voltage for the voltage monitor. But never combine it with an external voltage.



The voltage monitor should always be assigned to 3 cores to see if there is a line break or a short circuit.



Alternative to the 3 cores monitoring, the system can set to a **Stromschleifenüberwachung**

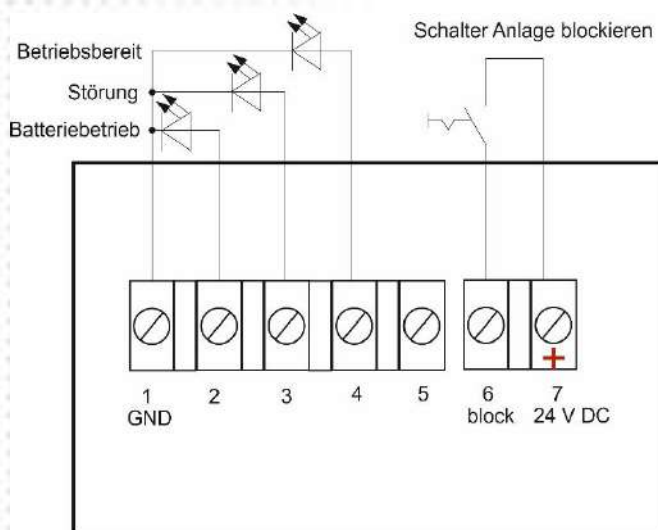
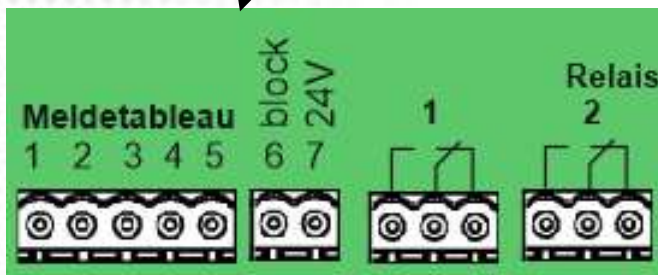
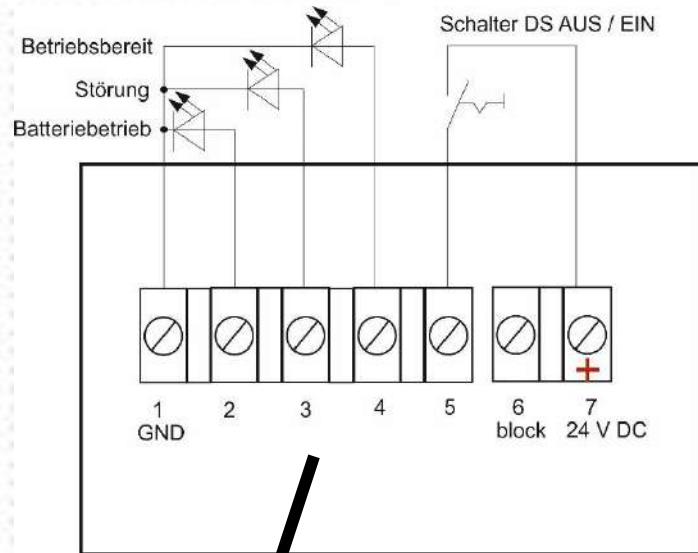


Therefore remove Jumper KSK.

If you remove the Jumper KSK you have to install a 220R resistance at end of the current loop.

17. Connection of the signaling Control Panel

A signaling Control Panel can be connected up to a cross section of 1,5mm² at the terminals.



Further, an external switch can be connected to the system to block it.



Attention: If there is an active emergency lighting blockage the connected luminaires **will not turn on** if there is a power failure

18. Commissioning



Before switching on the main voltage and inserting the battery, please check as follow:

- Check all connections for correct polarity and the tightness of the terminals
- Check if the critical circuit is connected correctly
- Check the correct connection of the battery block
- It is necessary to charge the battery 24 hours at least before the first function or operating time test

Observe the following sequence when switching on:

1. fitting the battery (observe polarity)
2. connecting the power supply cable
3. connecting the output circuits
4. insert battery backup
5. insert main fuse

19. First commissioning



When you start the system for the first time, you are automatically directed to an first commissioning menu. This menu helps you to configure the system in a simple way. You will be automatically guided through the system during commissioning and connected lights will be scanned.

For first commissioning you need the following informations:

- Installationcode
- Number of used circuits
- Operating mode: standard (separate DS and BS circuits) or mixed operation
- Number of luminaire per circle
- Number of batteries
- Nominal operating time
- possible luminaire locations

The installation menu is only executed once. After this you can do changes in the configuration menu (see below).

The installation and scanning of the luminaires will take approximately 10 minutes. After this the system is reday.



For commissioning and configuration you can connect a mouse and / or a keyboard to the USB-interface at the system. This is for simplified programming.



After connecting the main- and battery voltage the first installation starts.



Select here your system number.

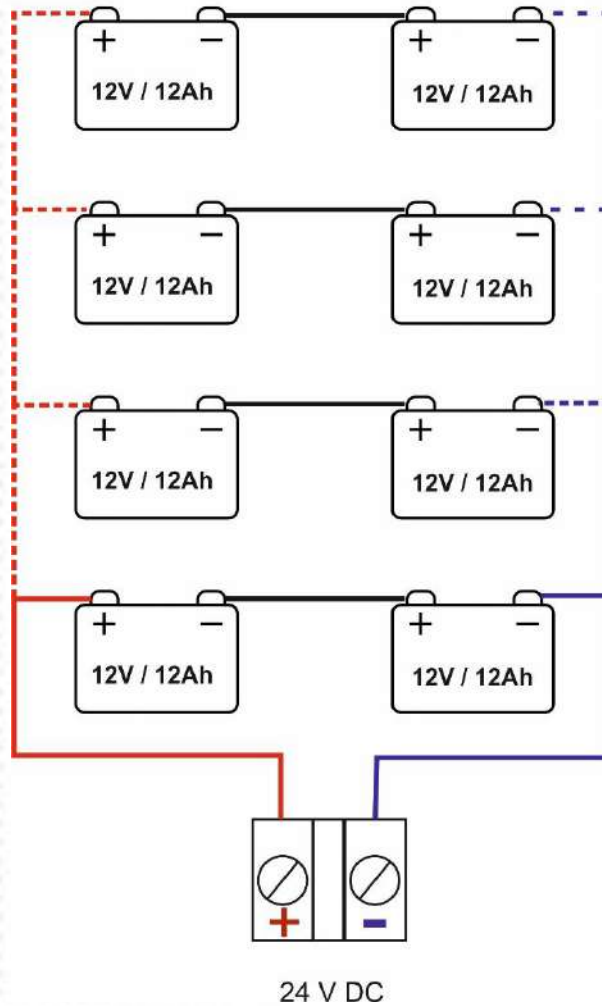


Choose your batteries.

You can install 8 batteries with 12Ah according to your wishes for operating time and connected power.

Two batteries must always be connected in a row for an operating voltage of 24V.

Battery connection



Ersteinrichtung

System Datum einstellen

24 - 03 - 17

↑ ↑ ↑

↓ ↓ ↓

System Zeit einstellen

17 : 41 : 24

↑ ↑ ↑

↓ ↓ ↓

speichern

You can set date and time with this



and select „save“ to go further.

Ersteinrichtung
Bitte Sollbetriebsdauer auswählen


1h


3h


8h


weiter

Please choose your operating time.

After this select the button „further on“.

Ersteinrichtung
Bitte Überwachung auswählen


Stromkreis
Überwachung


SET010
Überwachung


ELC
Überwachung


zurück


weiter

Choose the monitoring for the connected luminaires.

Circuit monitoring if you didn't installed **luminaires monitoring modules** in the luminaires or that type of modules. (Leuchtenüberwachungsbausteine)

Attention: Luminaire modules must be installed for mixed operation.

Ersteinrichtung
Ist die gesamte Leistung aller angeschlossenen Verbraucher an einem Kreis $\leq 120W$?

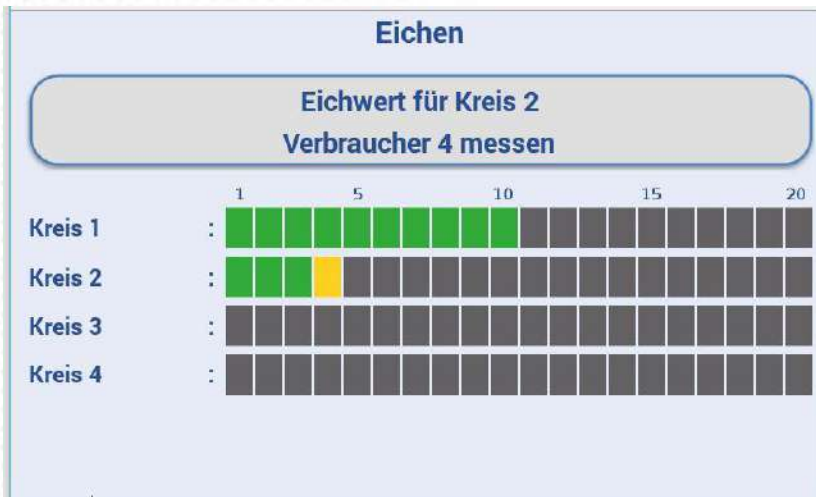

Ja


Nein


Zurück

Please read and check the following security questions carefully.

If everything is okay, select „Yes“ or select „No“ for cancel and make the changes at the installation.



After installation the system search for connected luminaires and register these in to the system.

Located luminaires are marked green.

Later installed luminaires can scanned in the configuration menu.

Eichen

NR	Kreis 1	Kreis 2	Kreis 3	Kreis 4
1	247	268		
2	214	236		
3	225	236		
4	229	256		
5	219	258		
6	234	246		
7	238	261		
8	216	254		
9	227	263		
10	235	270		
11	0	2		
12	3	0		
13	6	0		
14	0	0		
15	5	0		
16	8	0		
17	0	4		
18	0			
19	16			
20	6			

Ref K1= 683
Ref K2= 701
Ref K3:
Ref K4:

Select „searching luminaires“ and you see in a new screen the power of the luminaires.

Select again „searching luminaires“ and you go back.

To complete commissioning, the lights have to be programmed.



The overview page shows the luminaires found during **Eichen**. These were all set to DS.

Choose the output circuits you wish, to go to the configuration.



You have to save the changes!

If all luminaires set correct, the commissioning is ready and you can end the commissioning with:



Selection DS/BS

Select DS/BS. The button turns yellow. Now you can change the modus of the connected luminaires. Available for selection:

DS: The luminaires are set in continuous operation.

BS: The luminaires are set in non-maintained mode.

If you touch on the luminaires the modus will switch from DS to BS and vice versa. If you select "all DS" or "all BS" every luminaires will be switched.

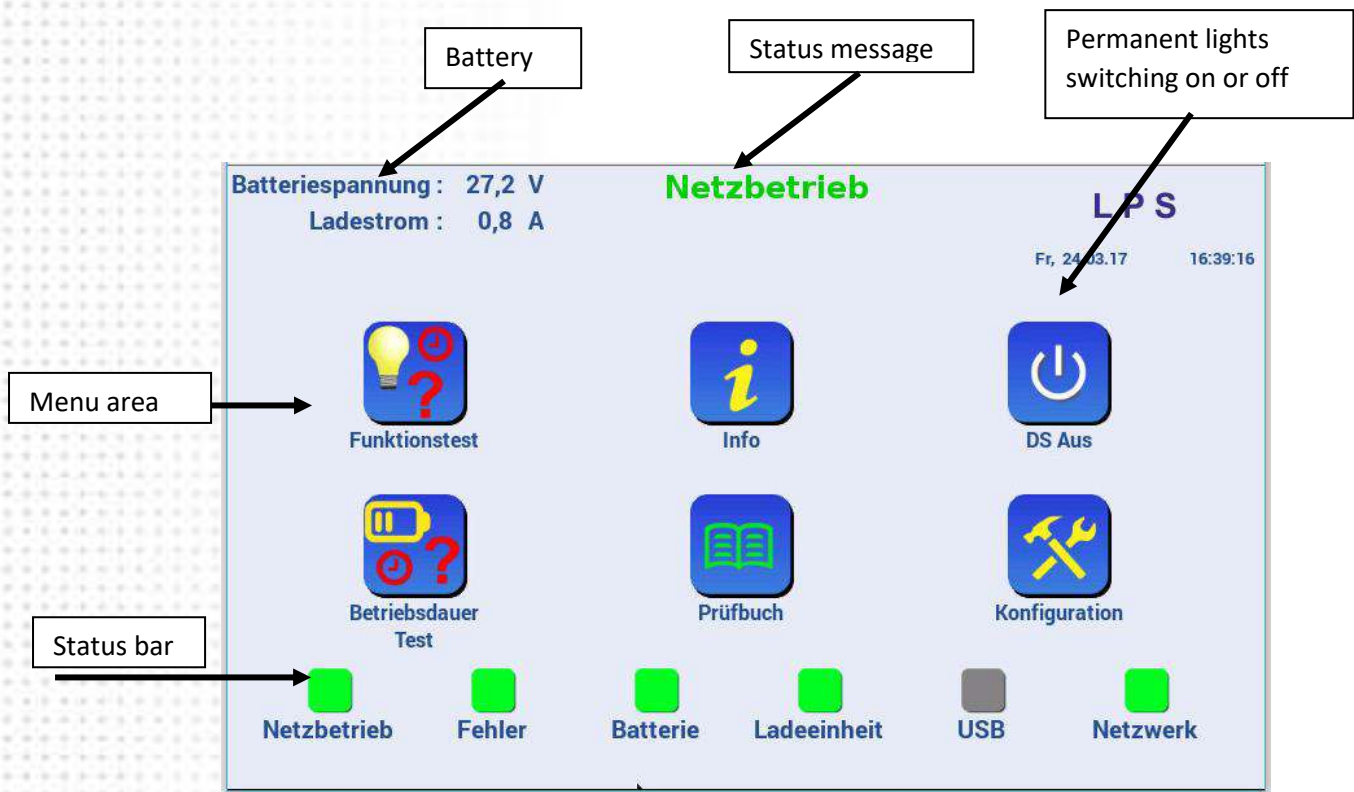
The installation is completed and the system is ready for use.

Connected switches or monitorings you can enter in the menu „configuration“.

Also you can enter changes for luminaires at this place.

(See menu configuration)

The main menu



You can select all menus and submenus with the icons on the touchscreen. You control the system via touchscreen. If you have to write a text, there will be a visual keyboard you can use. But you also can connect a mouse or standard keyboard via the USB interface.

In the status bar you will find an overview of the condition of the system. The status message will show you further informations or error messages about the system.

Battery: in the left upper corner you find informations about the battery voltage and the charging current of the battery at any time.



Menu function test

In the menu you find the last test results or start a function test manually.

To activate an automatic function test: see at "configuration function test" further below.

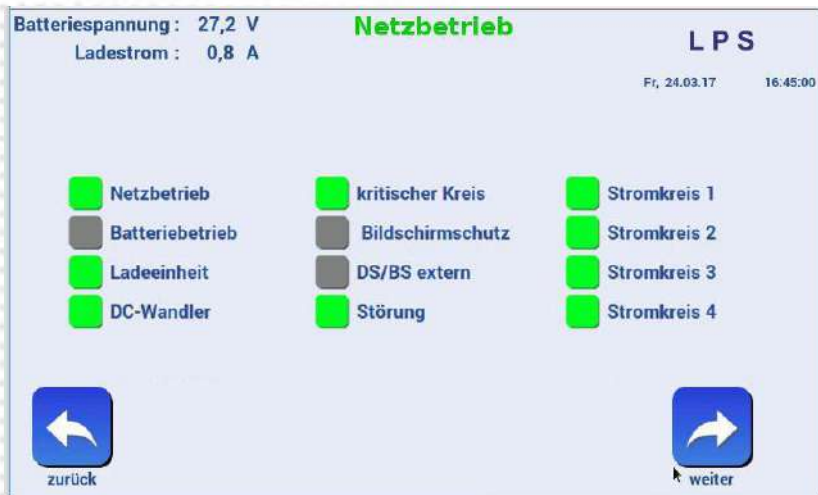
You can programming the automatic test to daily or weekly.

Select the time and save your selection. If you choose weekly you can set your wishing weekday same as monthly.



To activate the automatic test: See below service 25 /18.

20. Menü Info



At the info-menu you easy find a view about the condition of the system. Select „further on“ to switch to the next page.



At the menu on page 2 you have an easy view of diverse settings in the program.



On the following page you can see the connected luminaires.



Marked red luminaires are identified as a failure at the function test.



The luminaires are programmed in continuous operation



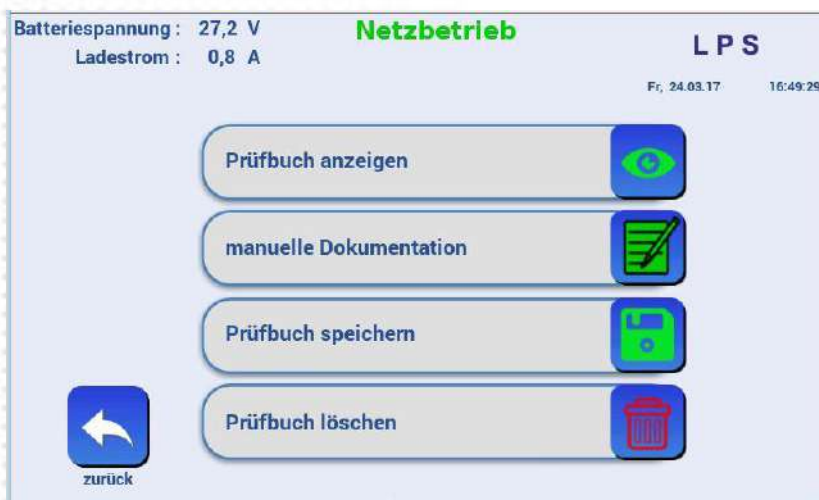
The luminaires are programmed in non-maintained mode



21. Menu duration test

At the menu duration test you can find the last test results or you can start a new test.

At the menu test time you can select the time you wish for the duration test (1H / 3h / 8h).



22. Menu check book

At this menu you can have a look on the check book. With the arrows you can scrolling through the



check book.

Manual documentations: This menu is used to enter information in the electronic test book such as maintenance carried out, battery replaced, luminaires serviced.

Save the check book: You can connect a USB memory stick to save the test book.

Delete the check book: Attention: there's no way to rebuild the memory!

23. Menu configuration



You have extensive options to set the system to your needs if you go to the configuration area. You need a password for the configuration menu.

The factory password is: „0000“. You can change this password in the menu.

Select „further on“ and you switch to further menu options.



25 / 1 Emergency lighting blockage

The system is blocked.
If there is an emergency lighting blockage the emergency light of the system doesn't work effective.
The charger remains in position.



Attention: If there is an active emergency lighting blockage the connected luminaires **will not turn on** if there is a power failure.

25 / 2 System location

You can choose a name for the system or you can put a location in.

25 / 3 Luminaire location



You can name every luminaires and outout circuits with locations according to your wishes.

Location circuit:
Select the circuit you will name.



And name the circuit.

Luminares circuit 1 – circuit 4 :

Shows where the connected luminaires are located. This is just an information field. The programming of the texts can be found below. (see: 25 / 12 configure luminaires)

Export the luminares location:

The texts of the luminaire locations will be exported to a connected USB storage device. The data will be saved in CSV format and can then be used with Excel to be edited. When editing with Excel, please do not use German umlauts (ä, ö, ü).

Import the luminaire location:

The texts of the luminaire locations can be imported from the USB storage device. The data has to be saved in CSV format and correspond to the format of the exported texts.

25 / 4 Manual reversion

In some darkened production sites the emergency lighting may not switch back automatically after a power failure. Only responsible persons can switch to normal operation „by hand“. The manual reversion switch-back prevents the system from automatically switching back to normal operation after an emergency operation and can only be reset via the display or an external button.

25 / 5 In- and outputs



On the system you can connect 8 light switches. 4 inputs are for potential free contacts (Input 1-4), the other 4 inputs (LSAA1-LSAA4) must be connected to the terminals in the system with 230V 50H. (see terminal plan). So that the light switches can be used and certain circuits, groups of luminaire or even individual luminaire can be switched on or off, they must be programmed.



Function input:

Here you can define what you want to switch with one of the 8 inputs. The choices are:
The luminaire of a complete circle **Handrückschaltung**, start a function test, connection of an external fan fault or external message or the switching of groups. When selecting groups, the following window opens.



You can assign one or more luminaires to a group.
Here you can assign one or more luminaires to a group.
So it is possible to switch a single luminaire here, but also to switch several freely definable luminaires from different circles
(Allocation of the luminaires to groups -> see: 25 / 8. groups)



Function relay:

For the 4 free relays you can specify in this menu what the 4 relays can report. You can also give one relay more functions for example to generate a collective fault message.

i **Standard-settings**
Relais 1: mains operation
Relais 2: fault



The programming of relays 1 and 2 also have an influence to the display on the remote control panel. Relay 1 defined the mains and battery operation message on the remote control panel. Relay 2 defined the collective fault message.

This allows you to select which fault messages are displayed as faults on the remote control panel!

25 / 6 Date and time settings



You can set the date and time with



this symbols

Confirm to save changes!

25 / 7 Timer

Batteriespannung: 27,2 V
Ladestrom: 0,8 A

Netzbetrieb

L P S

Fr, 24.03.17 17:18:33

Timer	Einschaltzeit	Ausschaltzeit	Funktion
Timer 1	08:47:00	18:00:00	Schalte DS Kreis1
Timer 2	06:30:00	16:00:00	schalte Gruppe 1
Timer 3	00:00:00	00:00:00	keine Funktion
Timer 4	00:00:00	00:00:00	keine Funktion

Zurück

Timer:

You have 24 timers with freely programmed switch-on and switch-off times. The timers can be programmed as weekly time switches

Individual luminaires, groups of luminaires, DS circuits or all luminaires can be switched using the timer.

25 / 8 Groups

In the group menu, you can combine individual luminaires into groups and then switch them.

You can program 24 different groups.

The groups can then be assigned to light switches in the inputs and outputs menu or switched automatically via the timer.

Batteriespannung: 27,2 V
Ladestrom: 0,8 A

Netzbetrieb

L P S

Fr, 24.03.17 17:20:09

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Gruppe 01 Stromkreis 1

speichern Zurück



Attention: Group 0 is reserved.

Group 0: These luminaires do not belong to any group.
Group membership is deleted.

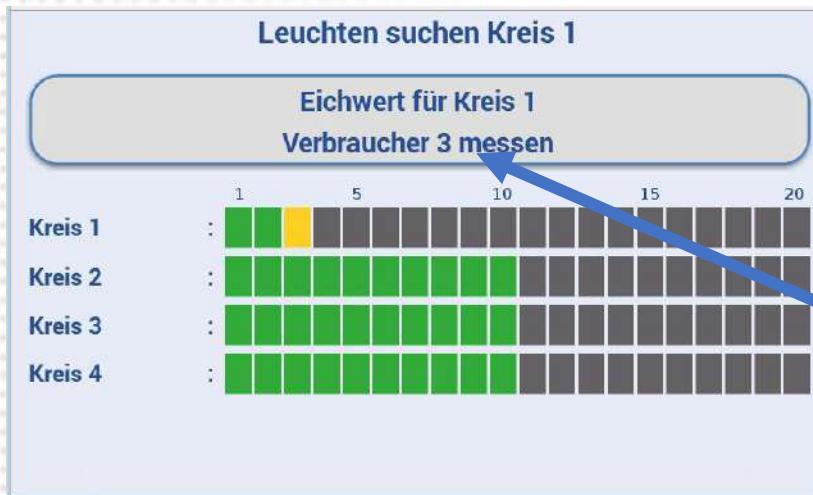
For programming individual groups start with group 1 !

25 / 9 Configure power circuit

Change or set how the luminaires are monitored. Built-in luminaire monitoring module or circuit-monitored system. If you select circuit-monitored system, you can also specify the function of the 4 circuits (permanent or standby switching).

25 / 10 Searching luminaires

During commissioning, the device searches for all connected luminaires and enter them in the system. If luminaires are If you connect luminaires later or change them, you can automatically scan them again using the "Search luminaires" menu. You can scan each of the 4 circuits individually or the complete system.



The system searches for all connected luminaires and enters them in the system.

Luminaires found are marked green.

Select "measure consumer X" you can switch to another screen that shows you the output of each individual measured lamp.

Leuchten suchen Kreis 1

NR	Kreis 1	Kreis 2	Kreis 3	Kreis 4
1	224	271	261	306
2	198	235	283	281
3	225	241	267	281
4	221	252	292	298
5	210	256	298	299
6	227	250	280	299
7	225	253	286	286
8	218	251	271	286
9	214	249	290	284
10	234	259	306	302
11	1	0	0	9
12	0	3	0	0
13	0	0	0	3
14	3	0	4	4
15	0	1	0	5
16	0	3	1	5
17	0	0	0	0
18	4	6	0	5
19	0	6	0	7
20	5	0	0	0

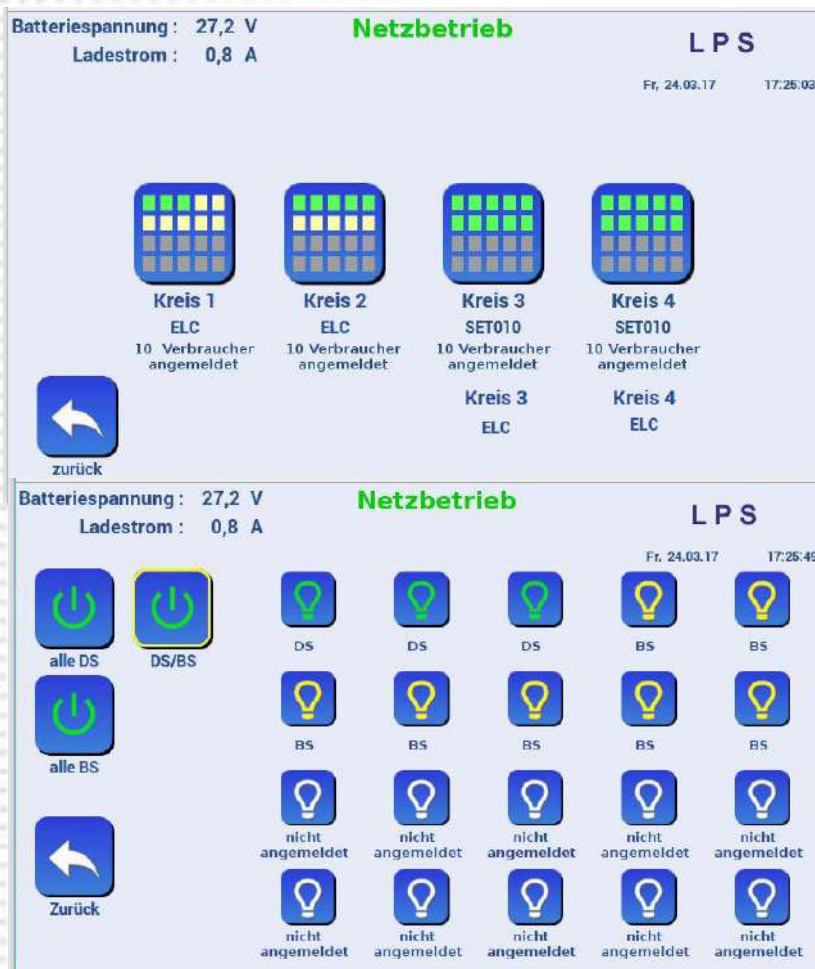
Ref K1= 682
Ref K2= 696
Ref K3= 701
Ref K4= 704

Click at the list and you will go back to the primary screen.

25 / 11 Activate screen protection

To prevent unauthorized use, the start screen can be protected with a password. If the screen protection is activated, a password must be entered before operation. After entering the password, you can use the system for 30 minutes. After that, the password protection is reactivated automatically. To change the password, see "Change password".

25 / 12 Configurate luminaires



At the "configure luminaires" menu, you can configure the connected luminaires and label the luminaires according to their location. On the overview page you can see how many luminaires are registered on the 4 circles and how they are monitored Color green = DS, yellow = BS

Select the desired output circuit to get to the configuration Select DS/BS

The button turns yellow. Now you can change the modus of the connected luminaires.

Available for selection:

DS: The luminaires are set in continuous operation.

BS: The luminaires are set in non-maintained mode.



You have to save the changes!

If you touch on the luminaires the modus will switch from DS to BS and vice versa. If you select "all DS" or "all BS" every luminaires will be switched.



Select location:

At this menu you can label each luminaire individually in order to see the location of the luminaire when they have a fault.

Select register:

For manual registration of a luminaire on a circuit. In the menu „search luminaires“, you can simply scan the corresponding circle again.

25 / 13 Function test

Here you can activate the automatically function test for daily, weekly or monthly. (See function test)



If you set „deactivate function test“ there will be no automatically test.

25 / 14 Password



You can change the password in the password menu.

The factory password is: „0000“.

25 / 15 Bus address

When networking several systems via a BUS panel, you can assign the systems a unique bus address here. Bus addresses are the numbers from 1 to 40. Each system must have a different bus address

25 / 16 Service



In the service area you come to further points

25 / 17 Factory settings

All data are reset to the factory settings. Settings are deleted and the first commissioning will started (see first commissioning, page 12)

25 / 18 Commissioning

If you want to repeat the commissioning, you can do it right here. (see first commissioning page 12).

25 / 19 Save / retrieval



If you want to import an update or want to back up the software, connect a USB stick and press "Search USB storage".

You see the USB stick whos found.

Update of the software: „renew programm&configuration“. Select softwareupdate. The software is read in from the USB stick. Then you have to start the update with the button "activate software". After completing the system, start it again using the "atart system" button.

25 / 20 Languages

Change the languages settings

25 / 21 TCP / IP

Display and settings of the network data.

24. Battery

According to EN 50272-2, the batteries must be checked regularly to ensure that they are working properly. In accordance with manufacturer's requirements you must check during an inspection following:

- Voltage settings of the loading unit
- Voltage of the whole battery
- Cleanness and tightness
- Tight fit of the connector

Defect battery blocks have to be changed immediately. Please note the manufacturer specifications in relation to the capacity, the charging voltage per cell, the information to the ventilation as well as the sizes.

25. Maintenance

The LPS system must be maintained by expert personal once a year. Also you have to make the battery test. The written report of the annual maintenance have to include following:

- charging voltage-/power
- discharging current
- Voltage of the battery at the start of the test
- Voltage of the battery at the end of the test

The written report of the annual maintenance is the basis of possible warranty claims.

26. Examination requirements of European Norm

According to the respective national valid guidelines and requirements you have to check the emergency lightning system.

The following information's are snapshots and make no claim to completeness.

Please read the current valid norms.

First exam

After installation the system, the installation must be subjected to a first exam.

EN 1838

DIN 5035-6

DIN EN 50172

DIN VDE 0100-600

DIN VDE 0100-560

DIN VDE 0100-718

DIN VDE 0108-100

Please note to this the national requirements and norms.

Recurrently inspections of electrical systems for safety purposes

According to the national valid requirements you have to make recurrently inspections.

The results must record in the test book with date and test-results. An automatic test-equipment must according to EN62034. After an operating time test the batteries don't have the full power until they're re-charged and then there is a risk of power failure. So you should only do long tests at times with low risk and you have to take appropriate safety measures until the battery is charging complete.

Daily check

You have to check the function display daily with a visual inspection to ensure the operation conditions. A direct check on the system isn't necessary if the status of the system is reported to a permanently manned position during operation, for example with a message panel.

The following conditions must be signalled:

- Ready for operation
- Emergency lightning operation
- Collective fault

Weekly check

The weekly check of the system is by switching the power source for safety reasons and to check function of the connected luminaires. An automatic test-equipment must according to EN 62034. You can start the weekly check manual in the main menu or automatic with programming of testtimes in the submenu "function test".

Monthly check

The monthly check of the system is by switching the power source to a power failure for safety reasons and check the function of all connected luminaires. After completing the check you have to rebuild the general lighting. You have to check the correct function of the monitoring system.

Annual check

You have to do the inspection of the rated operating time (battery test) once-a-year. Therefore the system must be checked for the compliance with the required operating time. As well you have to check if all luminaires are there, clean and functional. The duration test must be performed when no one is in the building. Please note that immediately after the operating time there is only a limited emergency operation possible. The rated operating time must be checked of function. You can start the operating test manual in the main menu.



365 days after the commissioning you get an automatic note for the annual check.

3-year-exam

At latest after 3 years you have to measuring the illuminance of the safety lighting according to DIN EN 1838.

Protocols of the recurrent inspections

The recurring inspection results according to the norm are saved for more than 4 years. If needed you can save it on a USB memory stick. The results can be edited in a usual windows word processor as well as printed.

27. Technical data:

- Input voltage : 230V 50/60Hz
- Number of output circuits: 4 pcs
- Number of switch inputs: 8 pcs
- Voltage signaling control panel: 24 V/DC
- Output voltage mains operation: 230 V/AC
- Output voltage emergency operation: 230 V/DC
- Voltage of battery: 24 V
- Max. total power of the system: 200 Watt
- Max. power per circuit: 120 Watt
- Protection: IP 20
- Protection class: 1
- Sizes (HxBxT): 700mm x 455mm x 190mm
- Weight (without battery): 17,7 Kg
- Allowed ambient temperature : 0°C to +40°C

Typ	Battery 24V	Maximal installed power with nominal capacity 100%			Maximal installed power with 25% <i>Änderungsreserve</i>			Weight with battery
		1 h	3h	8h	1h	3h	8h	
LPS 24-12	12Ah	130W	45W	-	100W	35W	-	25,3 Kg
LPS 24-24	24Ah	200W	115W	35W	200W	80W	24W	32,9 Kg
LPS 24-36	36Ah	200W	180W	60W	200W	135W	42W	40,5 Kg
LPS 24-48	48Ah	200W	200W	90W	200W	200W	65W	48,1 Kg

Technical changes reserved!