

USER MANUAL

BUSINESS IP select

Emergency escape lighting system
for freely programmable circuits



DIN EN 50171 • DIN EN 50172

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- ① Read the complete assembly and system start-up manuals carefully before commencing with the system start-up and take the series of the work steps into consideration.

Please keep this manual for future references.

1. BUSINESS IP SELECT – THE SYSTEM

1.1. Short description of the Business IP select system

The emergency escape lighting system ensures that in the case of failure of the general power supply, the supply the emergency escape lighting is immediately available in buildings and for a determined period of time.

In general, the emergency lighting is fed directly from the mains (AC). If the AC-emergency lighting mains fail, or the voltage decreases by more than 15% of the bus system, it automatically switches over to an equivalent power mode (usually DC). As the general power supply returns the system automatically switches back to AC-power after 60 seconds.

The charging unit operates according to an IU-characteristic in accordance with DIN 41773. The regulation is designated by a thyristor module, respectively in connection with an electronic control unit.

Furthermore, in accordance with VDE 0108 §5.2 the charging unit is so dimensioned that the battery is re-charged up to 80% of the operating time within 12 hours. By definition of the manufacturer's information maintenance-free batteries have no second characteristic.

The nominal current of the unit is flowing if the IU characteristic is adjusted (voltage range: 2.25 to 2.40 Volts per cell). The current is automatically limited to $I_n \pm 2\%$ of the particular charging state of the battery.

After reaching a constant voltage of 2.23 volts per cell (this might be distinguished by the type of battery) with an accuracy of $\pm 1\%$, the current decreases as the battery's filling level rises. An increase of the voltage of up to 2.4 volts per cell is able by the automatic charge boost.

1.2. Features of the BUSINESS select technology

- Individual switchability Using the display and control unit each emergency luminaire located in the circuit can be individually programmed and switched via digital inputs. Thus, an exterior luminaire can be switched in both mains and emergency operating mode.
- Time saving luminaire calibration The relay module ABG 8 is able to calibrate all final circuits simultaneously.
- Automatic recognition of luminaires and memorizing of their data The total power of each final circuit and the output of each luminaire are measured and indicated.

1.3. Operating elements

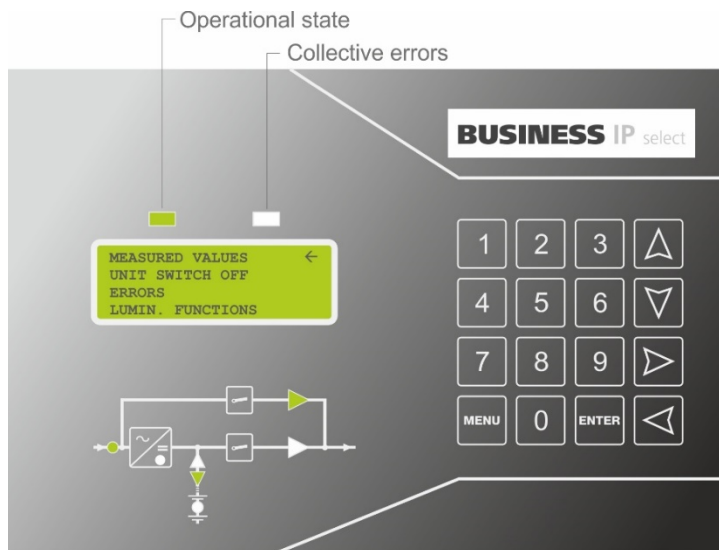
Display

The system always displays the menu MEASURED VALUES as long as the system is free of errors and no actions are carried out.

If errors exist they are shown on the display. With the arrow keys left < and right > you can scroll between the error messages until „end of list“.

After touching the menu button the main menu is displayed (as shown in the figure below). To select a menu, use the arrow keys up ^ and down v. As soon as the appropriate menu appears in the first line of the display, touch ENTER to confirm.

Press the MENU button once or multiple times to return to the main menu.



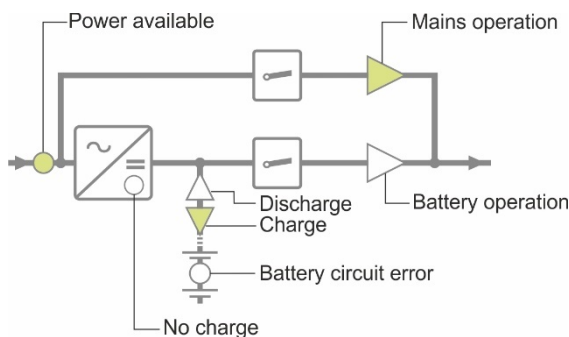
Key pad

Use the digit keys to enter numeric values like date, time, and specific system parameters.

Use the arrow keys to move within the menus and displays. Touch the MENU button (once or multiple times) to return to the main menu at any time.

By using the ENTER key the selection is confirmed, i.e. carried out.

Functional block diagram



1.4. Freely programmable final circuits

- ① Final circuits can be programmed as continuous light, switchable continuous light, or stand-by light.

1.4.1. Continuous light

- ① These final circuits are switched on when the system is operating in normal mode (e.g. emergency escape signs).

They can be switched on or off using the contact -X4:E4.

If the mains fail, or the nominal voltage in the monitored emergency escape lighting system decreases by more than 15% the final circuits are switched on automatically.

1.4.2. Switchable continuous light

- ① These final circuits are switched on as the system operates in normal mode.

They can be switched on or off (independently of the continuous light) by the terminal -X4 (e.g. emergency escape lights, that are connected in line with the stand-by luminaires)

If the mains fail, or the nominal voltage in the monitored sub-distribution decreases by more than 15% the final circuits are switched on automatically.

The switchable continuous light can be programmed via the menu point INPUT CONFIGURATION (p. 31), i.e. ASSIGNMENT (p. 38).

1.4.3. Stand-by light

- ① In this switching mode, the final circuits are generally deactivated if the system is operating in normal state. (In the case of continuous luminaire-programming, the respective final circuits are under voltage.)

If the mains fail, or the nominal voltage in the monitored sub-distribution decreases by more than 15% the final circuits are switched on automatically.

As the mains return or the nominal voltage increases to 90% the stand-by luminaires will be deactivated.

<i>Chart 1: Switching modes for stand-by luminaires</i>		
Switching mode	Explanation	
manually extinguishing	SL-mode is activated as long as the menu point "SL OFF" is activated in the main menu.	▶ terminal -X4:E3 is bridged
self-extinguishing	SL-mode switches off automatically de-activated as the mains return.	▶ terminal -X4:E3 is open (factory settings)
		The indication of terminal -X4:E3 is just an example here. Depending on

		the programming, another input can have this function as well.
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1.5. Standard connections and messages


All connections and messages included in the basic configuration are located on the terminals -X1/ -X2/ -X4/ -X7/ -X11/ -X12.

<i>Chart 2: Terminals in the assembly and the charging unit</i>	
-F8+, -F9- or -X1.+	Battery connection
-X1. L1, L2, L3, N, PE	Mains connection AC
-X1. 15 and -X1.16	Input for external operating mode switch
-X1.17 and -X1.18	Input for contact motor protection switch of the external fan (cancellation of charge boost)
-X1.19 and -X1.20	Input of the key switch „confirm buzzer collective error”
-X1.F21 and -X1.F22	Control circuit: for the supply of external 24 VDC-control circuits max. load 0.8A. This control circuit will not be de-activated for deep discharge.
-X4:E1	E1: mains power failure, critical circuit, and general NOC. Crit. Circuit (external phase-detector) Only with standard programming!
-X4:E2	E2: mains power failure, critical circuit, general NCC Crit. Circuit (external phase-detector) Only with standard programming!
-X4:E3	E3: SL confirm mains operating mode for places of assembly SL is manually extinguishing > terminal is bridged SL is self-extinguishing > terminal <u>is not</u> bridged Only with standard programming!
-X4:E4	E4: Continuous light on / off CL- mains operation mode; connection for ext. ON/OFF Only with standard programming!
-A20X1 [...]	Potential-free messages and control contacts → the assignment varies according to the unit's configuration and can be found in the respective schematic circuit diagram.
-X11	Consumer-final circuits connection
Only for optional SD-outgoing units:	
-X7	Bus terminals for data cable line Lan CAT 7 (4*2*0,8)
-X12	SD-final circuits
Only for optional external user panel (display):	
-X61	Bus terminals for data cable line Lan CAT 7 (4*2*0,8)
Only for optional 24V-control panel	
-XT	Connecting terminal for control panel


2. USE OF MANUAL AND SAFETY REGULATIONS

2.1. Symbols used in this manual


Instructions

-  Points out instructions for actions to be taken by the user.


Indications and messages

-  Indicates that the data and message texts displayed cannot be altered as they are part of the system.


Notes

-  Indicates tips and advice on an operation, or contains additional explanations for a procedure. Reading these notes is strongly recommended


References

-  Hyperlinks to further information concerning present operating step.

Warning!

-  Indicates operational requirements and restrictions. Inappropriate use may cause material damage. Be sure to read these items carefully to operate the product correctly, and avoid damage to the product

Danger!

-  Indicates a caution concerning operations that may lead to injury to persons (death or severe injury), or damage to property if not performed correctly. To use the system safely, always pay attention to these cautions.

2.2. Who is allowed to carry out the installation?

The installation is only to be carried out by electrically skilled persons who have been briefed on local and operational conditions.

It is recommended that the authorized and responsible person is to be trained specifically for the system.

Non-authorized and non-professional work on the system or ignoring the safety regulations can lead to failure, i.e. stoppage, of the safety system. This means immediate danger for persons or malfunction of the emergency system. In production facilities further damage might be caused to machines and systems as well as bringing production outfall.

In the case of improper and non-professional usage or damage caused by accident, abuse, neglect or misapplication, the manufacturer's warranty becomes void.

2.3. Safety and danger notes

The Business IP select system is part of the emergency and general lighting system and consequently part of a building's safety equipment. Installation and start-up of the system must be carried out with the appropriate care and precision.



Please note that the luminaires are supplied with 216 VDC in case of emergency operation. Mortal danger by electrical shock!



Only qualified electricians may carry out work on the 230 V mains. Any electrical installation (including any signal/control cables) must be carried out in compliance with the relevant guidelines and standards. National guidelines and regulations applicable in the country in which the system is installed and operated to be observed.



Improper use of the batteries or battery-powered parts of the system can cause risk of injury or death from high current or discharge arcs that can occur briefly on battery discharge.

Ensure that the batteries are connected to the correct poles.



Non-authorized or improper installation or handling may result in failures of the safety equipment. This implies danger for people and the emergency equipment itself. In addition, damage to machines and plants as well as loss of production are possible consequences for production sites.



Non-authorized or non-professional system installation or handling of the system may result in damage to the batteries. The electrolyte sulphuric acid contained in them is extremely caustic and contact can lead to serious injuries!

! Only luminaires with an operation voltage of 230 VAC (50/60 Hz) and 230 VDC may be connected to the final circuits for the emergency lighting end circuits of the system. Disregarding the instructions may result in damage to system and luminaires.

! Pay attention to the cable length of final circuits. A maximum length of 300 m must not be exceeded. Disregarding the instructions may result in interruption of the emergency lighting, because the proper communication between the system components is not given.

! The batteries must not be stored without maintenance for longer than 3 months. Disregarding the instructions may result in damage to the batteries. If the batteries are stored without a maintenance charge, their capacity decreases to the point where they will fail.

In standard operation, the following operations must be carried out continually:

- Frequent monitoring and review of the system.
- Inspection and logging of the system functions according to regulations

2.4. Safety measures in the case of errors and disturbance

① Inspections, safety checks and documentation are to be carried out only by authorized personnel.

Please note the national law and the guidance for conducting inspections and safety audits and furthermore the implementation of general and emergency lighting system.

2.5. Designated use

Business IP select is designed for controlling and monitoring an emergency lighting system. Its use for any other emergency systems is not permitted.

The adjustment and operation of the system are restricted to authorized technical staff.

Personal danger may occur in case of

- improper use
- disregard of the safety regulations

Business IP select and connected parts of the system may be operated only if all system components are in perfect technical condition and in compliance with:

- the health and safety notes contained in this user manual,
- the operating and safety instructions stipulated by the system operator,
- the commissioning notes and installation instructions supplied with the central battery system.

Failures which cannot be corrected by confirming are to be reported to the responsible service person.

Operational and safety regulations arise out of this user manual, organizational instructions as well as technical guidelines and regulations for the prevention of accidents.

The manufacturer will not assume warranty or liability for consequential damage occurring due to:

- improper use,
- disregard of regulations,
- non-authorized modifications or modifications made by technically non-competent persons to device connections and settings of the system,
- the use of inadmissible or unsuitable system parts.

2.6. Operation of non-authorized or non-suitable components or component groups

- ! In addition, pay attention to all laws, standards and guidelines applicable in the country in which the system is being operated.
- ! Verify whether electrical installations comply with the application environment. Special environment conditions (e.g. areas subject to explosion hazards or areas with an aggressive atmosphere) require special equipment and installations.
- ! Verify whether all series reactor and luminaires used fulfil the requirements of an emergency lighting system and of operation in an emergency lighting system.
- ! If the mains supplying the emergency lighting system are interrupted for more than three days, the battery is to be disconnected to prevent deep discharge and thus damage to the battery.


2.7. Prior to the initial or subsequent start-ups – important points!



Never switch the mains or battery supply on or off while the system is energized (with the final circuits switched on). For the battery supply note: connection cables to the batteries must never be separated from or connected to the battery rack while they are energized and the battery fuses in the unit must never be opened or closed while energized!

Danger of injury or death by electric shock!

Before the initial or subsequent start-up note the following points:

- The first or subsequent start-up may be carried out only by authorized electricians with detailed knowledge of the technical and legal basis for the installation and running emergency escape lighting systems.
 - In addition, pay attention to the national laws and regulations for the system start-up and running of the emergency escape lighting system.
 - Pay attention to measures for health and safety at work!
 - Pay attention to the proper handling of the batteries and battery-fed components.
-  Improper use of the batteries or battery-fed components of the system leads to the risk of injury or death from high current or electrical arcs which can occur briefly the batteries discharging. Pay particular attention to connecting the batteries with the right poles!
- Before start-up check that the assembly has been completed and was carried out in accordance with the instructions;
 - Compare all the work carried out with the plans and drawings;
 - Check that all connections are firmly connected in accordance with the plans and instructions.

3. ASSEMBLY AND PREPARATORY MEASURES

3.1. Mounting and installation



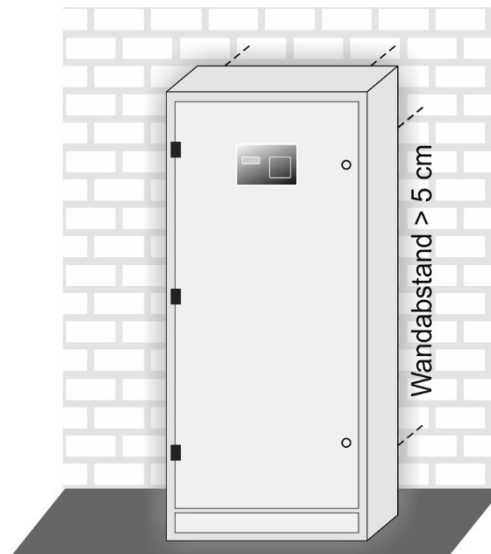
Figure 1 Assembly with door closed and opened

- ① The casing of the emergency escape lighting system must be mounted on flat and stable ground providing sufficient mechanical strength.

Additionally, the unit must be installed in a dust-protected environment so that the openings for the infiltration of cooling air are not covered. The distance between the back of the casing and the wall must be **at least 5 cm**.

Take care that the casing is not exposed to metal dust or acid fumes. Normal operation has no influence on the functionality of the system; however, it is useful to clean the casing from time to time.

In some cases, the cable entry can be carried out from the back of the casing; then observe the bend radius of the connecting cables and keep an appropriate distance to the wall, at least 5 cm.



- ① Depending on the unit type, the connection cables are inserted from the top or bottom of the casing with the aid of flange plates, brush strips, or cable glands.



Figure 2 examples: flange plates, brush strips, or cable glands

3.2. Battery installation

- ① The 216 VDC-power supply of the emergency escape lighting system can be supplied by batteries that are located either in the battery compartment, in the battery cabinet, or on a battery rack.
- ① In general, a battery set consists of 18 battery blocs that are connected in series. The batteries should be installed with both the first battery and the last battery in the first row. This ensures easier access to the batteries more comfortable and the danger of electrical shocks is significantly reduced.

3.3. Installation of connections

- ① Observe the table values according to VDE 0100-430:2017-05 and VDE 0100-520:2013-06 for the determination of the conductors' cross sections.

3.3.1. Connection of the power supply

- ① In general, each system is designed for the connection of three-phase current.
Incoming unit 3x400V, N+PE, 50Hz

The type names (e.g. E230G216/11IU, D400G216/11IU) mean:

Incoming unit	Volt	nominal battery voltage	Max. charge current	Current-voltage characteristic
Single-phase current: E	230	G216	/11	IU
Three-phase current: D	400	G216	/11	IU

- ① The input terminals of the mains L1, L2, L3 have to be bridged, as the single-phase current is the only type available as unit voltage when only single-phase is present.
- ☞ Compare the mains voltage with the unit voltage before connecting: the conductor's cross section depends on the input current of the charging unit or the operating current of the connected consumers, i.e. the maximum power of the switchover(s); the maximum value is decisive (see "general project data" or the "settings document" on the schematic circuit diagram)

Observe the selectivity of the emergency power main-distribution (EPMD).

- ① Only use fuses with delayed disconnect characteristic.

3.3.2. Installing final circuits

The circuits of the emergency escape lighting system are 2-pole protected by overload protection elements in "gL"-characteristic. They are to be loaded with max. 60% nominal current intensity.

However, larger fuse ratings are permitted if they are used as backup fuses in sub-distributions.

- ☞ Verify that the unit is in a voltage-free state.
- ☞ Set the connection for the power supply onto the terminals -X11 (F101 to F1xx), i.e. on the sub-distribution.

4. SYSTEM START-UP

4.1. Removing fuses

- ☞ Remove the battery fuses: -F8+ to -F9-
- ☞ Remove the control fuses of the constant voltage: -F18 and -F19
- ☞ Remove the charging fuse: -F1
- ☞ Remove the fuses of the switching unit: -F14.1 [...] -F14.x
- ☞ Remove all fuses of the final circuits located in the main-distribution: -F101 etc.
- ☞ If your system has sub-distributions, also remove the fuses for the final circuits -F101 [...] -F10x in the appropriate sub-distribution. Open the SD-fuses -F301 [...] -F30x

4.2. Connecting the power supply

- ① The power supply for the emergency escape lighting system is supplied by general 400 VAC / 230 VAC-mains, i.e. in the case of emergency by an equivalent power source.
- ☞ To connect the system with the 230 VAC/400 VAC-power supply, proceed as follows:
 - (1) Switch on the external power supply (EPMD) and verify this with a phase-sequence indicator: if the rotating field is wrong the system will not automatically switch in the emergency mode.
 - (2) Insert the external mains fuses -F14.1 and -F14.2.
 - (3) Insert the charging fuse -F1. within 5 seconds a soft start of the charge controller ensues.
 - (4) Measure the connected charging voltage on the unit's fuses -F8 and -F9 and compare the result with the settings document.

- ☞ If the mains has been connected correctly the LED-luminaires of the phase detector are green.



Figure 3 phase detector

4.3. Installing batteries

- ☞ Before installing the batteries ensure that
 - no persons are working at the emergency safety lighting unit,
 - the battery fuses -F8+ and -F9- are removed.



Disregarding these preparatory measures can lead to mortal danger from electric shock!

Observe the valid safety regulations and wear protective clothing and goggles.

- ☞ Also, verify that the battery voltage is the same as is determined in the setting document of your system (this document is part of the unit's documentation).

- ☞ To install the batteries of the Business IP select system, proceed as follows:

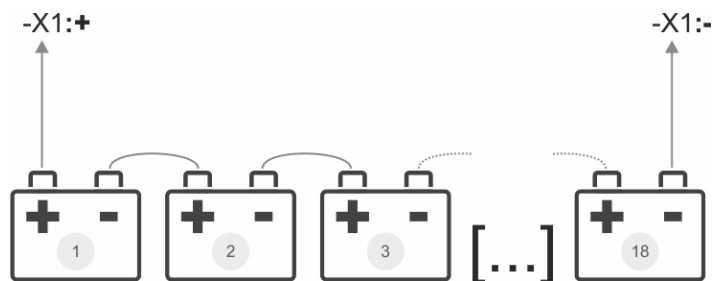
- (1) Have ready the delivered connecting bridges, polarity caps, and labels with the numbers.
- (2) Insert the connecting cables – which are externally inserted - into the unit.
- (3) Connect the battery system to the system observing the correct pole connections. For detailed information please consult the circuit diagram.



Observe the polarity of the connection cables!

- ① Use a short-circuit protected cable to connect the batteries with the unit, or, install the connection cables short-circuit protected.

- (4) Place one of the delivered connecting bridges between the minus pole (-) of the first battery and the plus pole (+) of the second battery and fix the bridge firmly.



- (5) Repeat step 4 for the other batteries until they are all connected in series.



To minimize the danger of electrical shocks it is advised to connect the batteries in groups (3 to 4 battery blocks).

When the assembly and installation works have been completed, you must close the other connections observing the safety regulations.

4.4. Installing and verifying battery blocs



Connect the connecting bridge of the last battery very carefully – then measure the battery voltage at the fuses -F8 and -F9.

- ☞ Verify the correct polarity of the batteries.

4.5. Inserting battery fuses

- ☞ Insert the battery fuses -F8+ and -F9-.

4.6. Starting the system

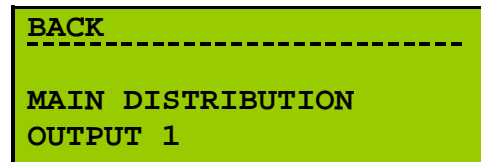
- ☞ Insert the control fuses -F18+ and -F19- for the MPS system. After this, the system starts immediately.
 - ☞ Touch the MENU-button on the display keypad.
 - ☞ Choose the menu point „UNIT SWITCH ON“.
 - ☞ Confirm your choice with ENTER.
- > In the functional block diagram the green LEDs “operational state”, „power available“ and “mains operation” are flashing. (⇒ p. 7)
- ☞ Verify whether the system is operating correctly and correct any errors.

4.7. Initial calibration

- ! Carry out the following steps before the first luminaire test.
- ☞ Verify that all final circuits are connected with the correct polarity and without earth-leakage.
- ☞ Set any free final circuits to „NOT USED“. Otherwise the message “FINAL CIRCUIT XX NO CURRENT” will be displayed.
- ☞ Navigate to the menu: LUMINAIRE FUNCTIONS > OUTPUT CONFIG.

The display indicates:

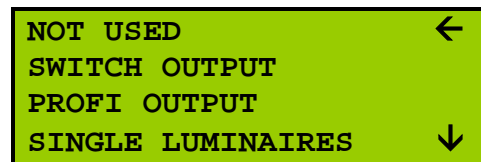
LUMIN. FUNCTIONS OUTPUT CONFIG.



- ☞ Select the appropriate output and confirm with ENTER.

The display indicates the output functions:

LUMIN. FUNCTIONS OUTPUT CONFIG. [...]



- ⓘ The first line of the display always indicates those output functions that are currently assigned to the respectively output.
- ☞ Select the output function NOT USED and confirm with ENTER.
- ☞ The display steps back. You can select more outgoing circuits and assign several functions.

4.8. Installing optional components (optional)

If the system has peripheral components (e.g. control panel MFT 5 / MFT 6, battery monitoring module BEB 18), these should now be built in and installed.

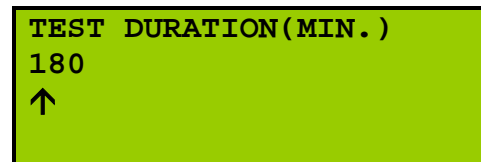
Please refer to the wiring diagram to find out which modules are installed in your system and how these are mounted and installed in a professional manner. Carry out the mounting / installation precisely and in the correct order.

4.9. Capacity test

- ① The system start-up is completed by carrying out a capacity test. The test duration determined by the manufacturer is 2/3 of the nominal operation time. A deviated test duration must be defined manually.
- ☞ Select the menu point CAP.TEST and confirm with ENTER.

The display indicates:

FUNCTION CONTROL CAP. TEST



- ☞ If the test duration (here: 180 min.) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the number of minutes via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ← and ➤ you can move the arrow to the left or right. Confirm with ENTER.
- ① The capacity test will be carried out for the determined test duration in minutes.
- ☞ The display shows the menu MEASURED VALUES. Here, you can see all results.
- ☞ The test can be cancelled by touching ENTER.
- ① If the test cannot be carried out successfully, the message TEST CANCELLED is shown in the display.
In this case, choose the menu FUNCTION CONTROL > TEST RESULTS (⇒ page 45) to analyse the reason for the failure.
- ① If the system is the mode of boost charging, switched-off, or has an error, then the display indicates: FUNCTION CONTROL LOCKED.
To recognize the interlock much faster, print the system state. To do so, choose the option SYST.STATE PRINTOUT (⇒ page 48) in the menu GENERAL OPTIONS. The actual system state will be printed.
- ! After re-starting the system, the test duration determined will not be memorized. The test duration that was determined by the manufacturers (2/3 of the nominal operating time), will be displayed again.
A shorter or longer test duration has to be defined again.

5. MENU STRUCTURE AND OPERATION

- ① The user manual is to be read as following:

The menu item of the main menu concerned is always shown on the left side.

The appropriate sub-menus, that have already been selected and confirmed with ENTER, are indicated in the middle. For a better orientation and additional insights, see the screenshots of the actual operation steps of the display on the right side. Thus, you can immediately identify the appropriate menu position and its related steps at any position in the user manual.

5.1. Main menu

- ☰ In general, the system indicates the menu MEASURED VALUES.
- ☞ Press the menu-button to open the main menu.

The display indicates:

MEASURED VALUES	←
UNIT SWITCH OFF	↑
ERRORS	
CHARACTERISTIC ¹	↓

LUMIN. FUNCTIONS	←
TEST FUNCTIONS	↑
FUNCTION CONTROL	
SYSTEM STATE	↓

GENERAL OPTIONS	←
SYSTEM FUNCTIONS	↑
SYSTEM SETTINGS	
SL OFF	↓

TIMER	←
MARGINAL VALUES	
CL ON/OFF	↑

- ① The display is able to indicate only four lines simultaneously. To get to the fifth, sixth, etc. line, press the arrow ↓.

To get back to the former lines, press the arrow of the opposite ▲.

The menu point you would like to select has to be in the first line of the display. It will be marked by the arrow symbol ←. Press ENTER to confirm the selection.

¹ This menu point is indicated if the system has an automatic charge boost.

5.2. MEASURED VALUES

- ☞ Choose the menu point MEASURED VALUES and confirm with ENTER.

The display indicates:

MEASURED VALUES

UNIT ON	
<i>DATE</i>	<i>TIME</i>
BATT.VOLT.	[V]
CHAR.CURR.	[A]

USE1-CURRENT	[A]
USE2-CURRENT	[A]
BSM TEMP. ²	[°C]
DRAWN CAP.	[AH]

- ☞ Scroll within the measured values by using the arrows ▲ and ▼.
- ☰ The MEASURED VALUES menu indicates the results of the latest measurements.
- ⓘ In the case of earth-leakage the related values are shown in the menu ERRORS (⇒ page 23).

The earth-leakage is measured between the minus and plus poles of the battery to the ground.

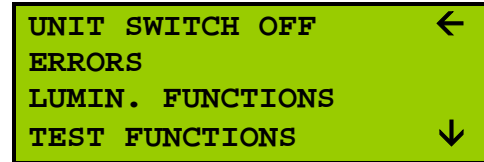
See “Errors and troubleshooting” (⇒ page 67)

² This menu point is indicated if the system has a battery single bloc monitoring module (BEB18) with a detached temperature sensor.

5.3. UNIT SWITCH ON/OFF

- ☞ Press the arrow ▼ until the menu point „unit switch on/off“ appears in the first line and next to the arrow ←.

Pressing the ENTER-key shut down the unit, pressing it again starts it up.



5.4. ERRORS

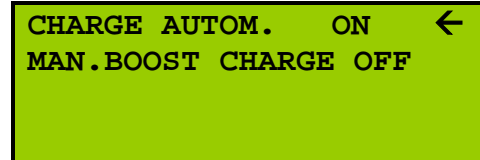
- ☰ The system always displays the menu MEASURED VALUES as long as the system is free of errors and no actions are carried out.
If errors exist, they are shown on the display indicated with date and time of the error report.
- ☞ With the arrow keys up ▲ and down ▼ you can scroll between the error messages until „end of list“.
- ☰ The errors and their states will be saved in the logbook.

5.5. CHARACTERISTIC

- ① **This menu point appears only if the unit has an automatic charge boost.**
- ☞ Navigate to the menu point CHARACTERISTIC and confirm with ENTER.

The display indicates:

CHARACTERISTIC



5.5.1. Switching the automatic charge boost on or off

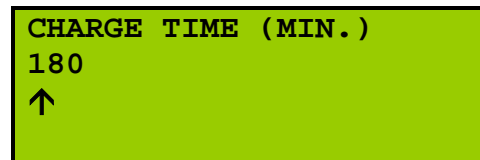
- ☞ CHARGE AUTOM. ON/OFF is in the first line of the display and selected by the arrow ←.
- By pressing the ENTER-key you can activate or deactivate the automatic charge boost. The current mode/state is always displayed in the first line.
- ☞ To leave this menu point press the MENU button.

5.5.2. Switching the manual charge boosting on or off

- ☞ Select the menu point MAN.CHARGE BOOST ON/OFF and confirm with ENTER.

The display indicates:

CHARACTERISTIC MAN.CHARGE BOOST ON/OFF



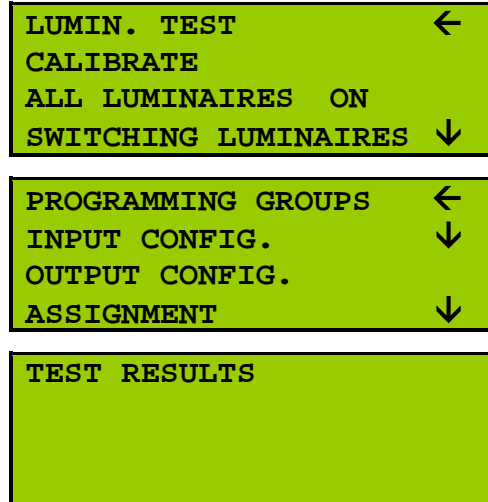
- ☞ If the test duration (here: 180 min.) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right.
- ☞ By pressing the ENTER key you can reach the previous menu.
- ☞ MAN.CHARGE BOOST ON/OFF appears in the first line of the display and is indicated by the arrow ←.
- Press the ENTER key to confirm the manual charge boost for the particular duration (time in minutes).
- ① After the expiration of this time, the automatic charge boost will be re-set on OFF. A safety switch-off will take place after 11 hours.

5.6. LUMINAIRE FUNCTIONS

☞ Navigate to the menu point LUMINAIRE FUNCTIONS and confirm with ENTER.

The display indicates:

LUMINAIRE FUNCTIONS



5.6.1. Luminaire test

- ① Before carrying out a luminaire test for the first time, the unit has to be calibrated. More information is to be found in Chapter 4.7 (⇒ page 19)
- ① If the system is in the mode of boost charging, switched off, or has an error, then the display indicates: FUNCTION CONTROL LOCKED.

In this case, it is not possible to carry out any test, at all. If applicable the menu item is no longer displayed.

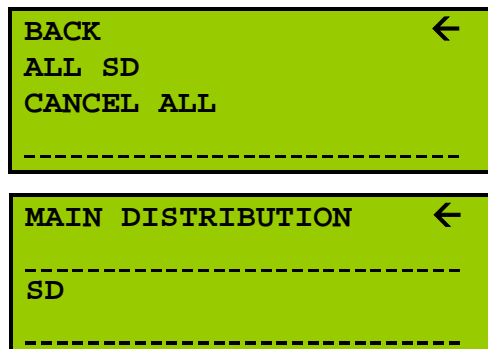
To recognize the interlock much faster, print the system state. To do so, choose the option SYST.STATE PRINTOUT (⇒ page 48) in the menu GENERAL OPTIONS. The current system state will be printed.

☞ LUMINAIRE TEST appears in the first line of the display and is indicated. Confirm with ENTER.

The display indicates the main-distribution and all sub-distributions:

LUMINAIRE FUNCTIONS

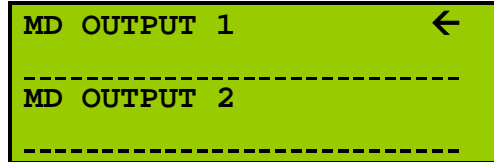
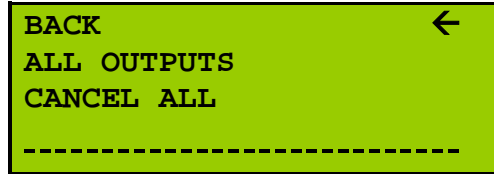
LUMINAIRE TEST



☞ Now you can choose to test the luminaires of all sub-distributions (SDs) or just the luminaires of particular circuits.

① If you have selected ALL SD and confirmed your choice with ENTER, the luminaire test starts immediately. The display indicates the menu LUMINAIRE FUNCTIONS again.

① If you have selected the MAIN-DISTRIBUTION, all outputs, i.e. final circuits, will be shown in the display.



[...and so on until the last output]

☞ Select the particular final circuit that you would like to be tested. Press the arrow keys up ▲ and down ▼ to scroll between the final circuits. Press the arrow keys left ◀ and right ▶ to scroll much faster.

☞ The particular final circuit appears in the first line of the display and next to it the arrow ←. Confirm with ENTER to start the test immediately.

The display indicates the menu LUMINAIRE FUNCTIONS again.

☞ During the luminaire test the green LED for “mains operation” blinks (⇒ Chapter 0)

① The test can be prematurely cancelled by pressing LUMINAIRE FUNCTIONS > LUMIN. TEST > CANCEL ALL and confirming with ENTER. However, you are recommended to run this test through the end.

The test duration varies according to the number of connected luminaires.

① If you want the luminaire test to be performed automatically, define a test time in the menu TIMER (⇒ page 62).

5.6.2. Calibration

① Before carrying out a luminaire test for the first time, you have to initially calibrate the unit.

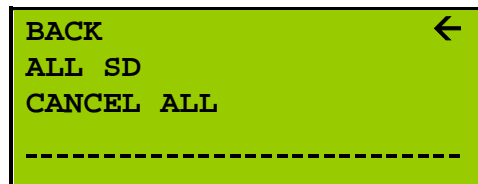
More information is to be found in Chapter 4.7 (⇒ page 19)

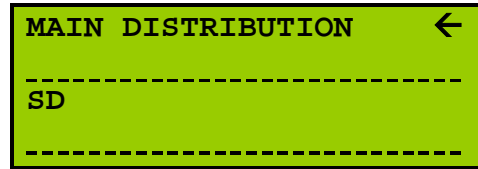
☞ To calibrate luminaires, select the menu CALIBRATE ← and confirm with ENTER.

The display indicates the main-distribution and all sub-distributions:

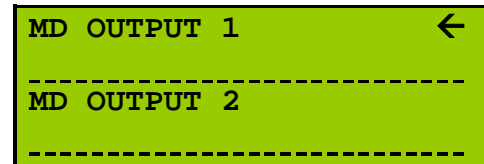
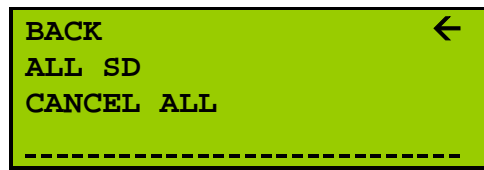
LUMIN. FUNCTIONS

CALIBRATE





- ① By selecting and confirming BACK you can reach the menu LUMINAIRE FUNCTIONS.
- ☞ Now you have the opportunity to calibrate all sub-distributions or particular sub-distributions.
- ① When you have selected ALL SD and confirmed your selection with ENTER, the calibration process starts immediately. The display indicates the menu LUMIN. FUNCTIONS again.
- ① If you have selected the MAIN-DISTRIBUTION all circuits will be shown in the display.



[...until the last final circuit]

- ☞ Select the particular final circuit that you would like to calibrate with the aid of the arrows ▲ and ▼. Press the arrow keys left ◀ and right ▶ to scroll much faster.
The particular final circuit that you wish to calibrate is in the first line of the display and next to the arrow ←. Confirm with ENTER to start the test immediately.
The display indicates the menu LUMINAIRE FUNCTIONS again.
- 📄 During the calibration process the green LED for “mains operation” blinks (⇒ p. 7)
The test duration is 15 minutes and includes a short warm-up time. All final circuits can be started simultaneously.
- ☞ The calibration can be cancelled manually by pressing LUMIN. FUNCTIONS > CALIBRATE > CANCEL ALL and confirming ENTER. However, you are recommended to run the calibration through the end.
- ① Automatic tolerance: the calibrated luminaire performance (in Watt) is automatically reduced to 50%.
- ! **Calibrate the luminaires before carrying out a luminaire test.**
- ① If the system is in the mode of boost charging, switched off, or has an error, then the display indicates: FUNCTION CONTROL LOCKED.
In this case it is not possible to carry out any test at all.
To recognize the interlock much faster, print the system’s state. To do so, choose the option SYST.STATE PRINTOUT (⇒ page 48) in the menu GENERAL OPTIONS. The current system state will be printed.
- ① Have all luminaires been recognized? If not, proceed as described in the Appendix on ⇒ page 70.

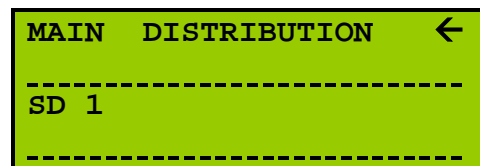
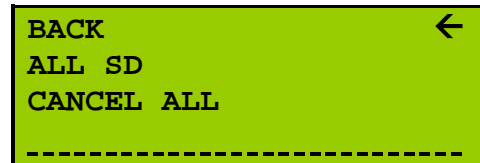
5.6.3. All luminaires on

- ① The function ALL LUMINAIRES ON is a support for controlling the luminaires in a building.
- ☞ Navigate to the menu point ALL LUMINAIRES ON and confirm with ENTER.

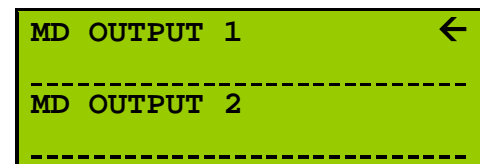
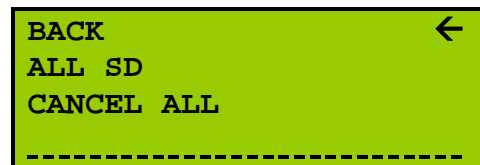
The display indicates the main-distribution and all sub-distributions:

LUMIN. FUNCTIONS

ALL LUMINAIRES ON



- ☞ Now, you can decide to switch on all sub-distributions or the luminaires of particular circuits.
- ① If you have chosen ALL SD and confirmed your selection with ENTER, all luminaires will be switched on for an hour.
- ① If you have chosen the MAIN-DISTRIBUTION, all luminaires will be shown in the display.



[...until the last final circuit]

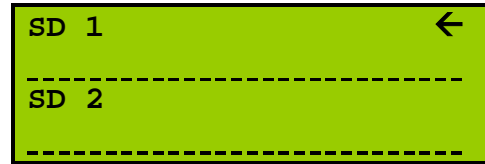
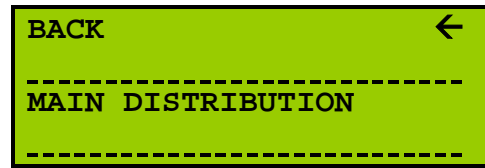
- ☞ By using the arrow keys, you can determine the section of the building in which the luminaires are switched on. Press the arrow keys \uparrow and \downarrow to scroll step by step, press the arrow keys left \leftarrow and right \rightarrow to scroll much faster.
- Confirm your selection with ENTER.
- ① The particular luminaires will be switched on for one hour.
- ☞ In the meantime, the green LED „mains operation” blinks continually.
- ☞ The luminaires can be switched off manually by selecting the menu LUMIN. FUNCTIONS > ALL LUMINAIRES ON > CANCEL ALL and confirming with ENTER.

5.6.4. Switching luminaires

- ① **Only available for systems with monitoring modules of type SET010 select.**
- ☞ Navigate to the menu point SWITCHING LUMINAIRES and confirm with ENTER.

The display indicates:

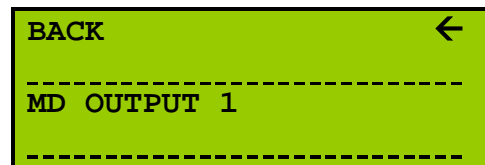
LUMIN. FUNCTIONS SWITCHING LUMINAIRES



- ① By selecting and confirming BACK you are getting back to the menu LUMIN. FUNCTIONS again. Select the MAIN-DISTRIBUTION and confirm with ENTER.

The display indicates all outputs:

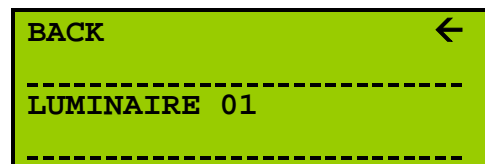
LUMIN. FUNCTIONS SWITCHING LUMINAIRES
MAIN-DISTRIBUTION



- ① By selecting and confirming BACK you go the menu LUMIN. FUNCTIONS.
- ☞ Choose the particular final circuit whose luminaire you would like to switch. Press the arrow keys ▼ repeatedly until the particular final circuit is in the first line of the display and selected by the arrow ←. Confirm with ENTER.

The display indicates all luminaires of the respective final circuit:

LUMIN. FUNCTIONS SWITCHING LUMINAIRES
MAIN-DISTRIBUTION
MD OUTPUT X



- ☞ Select the respective luminaire with the aid of the arrow keys ▼ and ▲. Confirm with ENTER.

The display indicates:

LUMIN. FUNCTIONS SWITCHING LUMINAIRES
MAIN-DISTRIBUTION
MD OUTPUT X
LUMINAIRE X



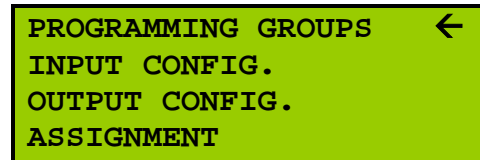
- ① After confirming the function „OFF, or “ON” with ENTER the appropriate luminaire will be switched off, i.e. on.

5.6.5. Programming groups

- ① **Only available for systems with monitoring modules of type SET010 select.**
- ① Select the menu point PROGRAMMING GROUPS if you already have programmed groups in the visualization.
- ☞ Select the menu point PROGRAMMING GROUPS in the menu LUMIN. FUNCTIONS.

The display indicates:

LUMIN. FUNCTIONS



- ☞ As soon as you have confirmed the menu point PROGRAMMING GROUPS by pressing the ENTER key, the appropriate programming of the visualization will be accepted.

5.6.6. Input configuration

- ① In the INPUT CONFIG menu, you can freely programme inputs. The following options are available:
 - switch 1 = ON
 - switch 0 = ON
 - response lag 1 = ON
 - response lag 0 = ON
 - Delayed rel. 1= ON
 - Delayed rel. 0= ON
 - Lock-type contact 1 = ON
 - Lock-type contact 0 = ON
 - Eltako (FLIP-FLOP)
- ① Please note that inputs 1 to 4 are programmed by the manufacturer, as following:

-X4:E1 ³	Phase detector general critical circuit (NOC)	Connected at terminal -X4, clamp 1/2	input E1: connect the phase detector here and remove the bridge
-X4:E2	Phase detector general critical circuit (NCC)	Connected at terminal -X4, clamp 3/4	

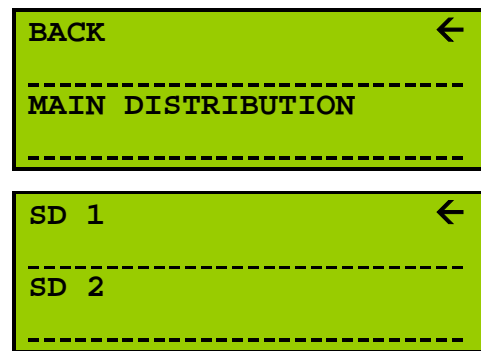
³ E stands for the German word “Eingang”, which means input

-X4:E3	SL confirm for places of assembly	Connected at terminal -X4, clamp 5/6	input E3 with bridge = lock-type contact for places of assembly functions
-X4:E4	CL On/Off for external switches	Connected at terminal -X4, clamp 7/8	input E4 with bridge = CL On

- ① In the following the programming for input E1 is explained exemplarily.
- ☞ Navigate to the menu point INPUT CONFIG. and confirm your selection with ENTER.

The display indicates the main-distribution and all sub-distributions:

LUMIN. FUNCTIONS INPUT CONFIG.

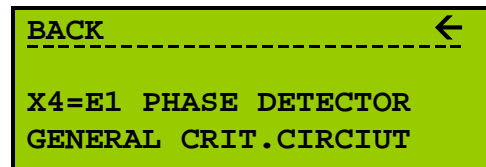


- ① By selecting and confirming BACK you will be returned to LUMIN. FUNCTIONS.
- ☞ Select the menu point MAIN DISTRIBUTION and confirm with ENTER.

The display indicates:

**LUMIN. FUNCTIONS INPUT CONFIG.
MAIN DISTRIBUTION**

Inputs E1, E2, E3 and E4 are programmed by the manufacturer.

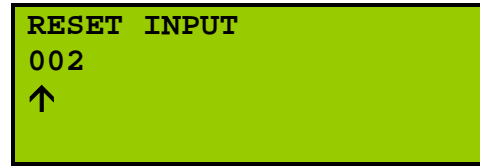


- ① The number of freely configurable inputs depends on the number of input modules.⁴
- ☞ Choose X4=E1 PHASE DETECTOR and confirm with ENTER.
- ☞ Confirm the menu point LOCK-TYPE CONTACT 0=ON (i.e. LOCK-TYPE CONTACT 1=ON) with ENTER.

⁴ If extra digital input modules like -A3X are installed, then extensions of eight inputs per module are possible. The max. number of available input modules is 15 pcs. Depending on the system's configuration the installation of additional input modules is possible – on demand.

The display indicates:

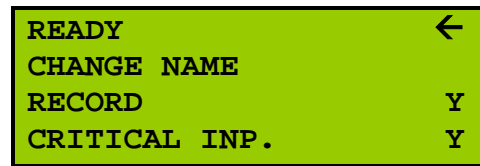
LUMIN. FUNCTIONS INPUT CONFIG.
 MAIN DISTRIBUTION
 X4=E1 [...]
 LOCK-TYPE CONTACT [...]



- ☞ Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right. Confirm with ENTER.
- To save your settings, press ENTER.
- ☞ Confirm this menu point by pressing ENTER.

The display indicates:

LUMIN FUNCTIONS INPUT CONFIG.
 MAIN DISTRIBUTION
 X4=E1 [...]
 LOCK-TYPE CONTACT [...]
 RESET INPUT

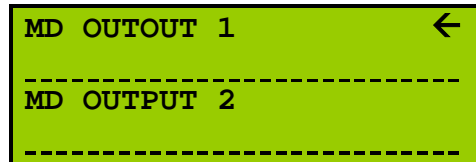


- ☞ By pressing the ENTER key you can choose between Y (YES) and N (NO) in the line concerned. Explanations for this display and monitoring modes can be taken from the table on page 34.
- ☞ To save your settings press ENTER until READY ← appears in the first line of the display.
- ⓘ Your settings are now saved. The display returns to the selection of inputs.
- ⓘ The connection of the input configuration and the appropriate final circuits can be managed in the menu ASSIGNMENT (⇒ page 38).
- ☞ Now you can select a freely configurable input (5-n) by confirming with ENTER.
- ☞ The free programming of the inputs 5-n can be carried out in 5 steps:
 - (1) Select the area
 - (2) Select the input
 - (3) ▶ select the programming
 - (4) ▶▶ change the time
 - (5) ▶▶▶ change the display and monitoring modi

The following table gives information on the options and steps:

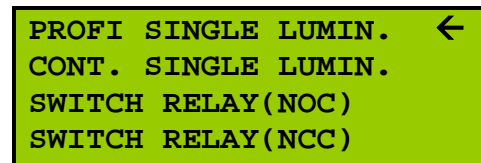
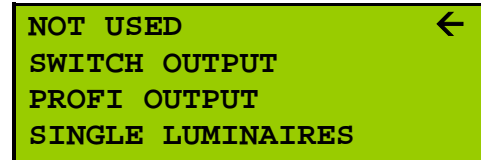
Chart 3: Programming of the inputs – Options for the inputs 5-n		
<p>▶ FREE if the input is not being used.</p>		
<p>▶ SWITCH 1 = ON in use e.g. for external light switch of selected circuits.</p>	▶▶ RESET INPUT	<p>▶▶▶ CHANGE NAME Change the input names using the arrow keys of the touch panel.</p> <p>▶▶▶ RECORD The result will be saved in the log book.</p> <p>▶▶▶ CRITICAL INP. If the event concerned occurs all luminaires will be switched on.</p>
<p>▶ SWITCH 0 = ON in use e.g. for phase detector loops with optional cable fault detection. The selected final circuits are switched on by opening the loop.</p>	▶▶ RESET INPUT	
<p>▶ DELAYED REL. 1 = ON same function as switch 1=ON, but delayed. Applicable for stairwell light.</p>	▶▶ TIME IN SECONDS	
<p>▶ DELAYED REL. 0 = ON same function as switch 0=ON, but delayed.</p>	▶▶ TIME IN SECONDS	
<p>▶ DELAYED REL. 1= ON same function as switch 1=ON, but delayed. Applicable for messages</p>	▶▶ RESET INPUT	
<p>▶ DELAYED REL. 0= ON same function as switch 0=ON, but delayed.</p>	▶▶ RESET INPUT	
<p>▶ LOCK-TYPE CONTACT 1 = ON Applicable for SV-SD with phase-detector loop, whereby the menu point SL OFF switches off the stand-by luminaires after the external power supply returns.</p>	▶▶ RESET INPUT	
<p>▶ LOCK-TYPE CONTACT 0 = EIN Same function like switch 0= ON. Applicable for SV-SD with phase-detector loop for places of assembly when operated with zero-signal current.</p>	▶▶ RESET INPUT	
<p>▶ ELTAKO (FLIP-FLOP) same function as switch 1=ON, but as Flip-Flop.</p>	▶▶ RESET INPUT	

- ☞ The output, that occur in the first line of the display, will be selected. Confirm your selection with ENTER.



The display indicates all output functions:

LUMIN. FUNCTIONS OUTPUT CONFIG.
[...]



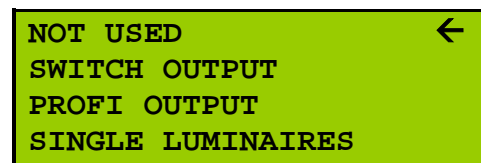
- ① The particular output function that is currently assigned to the output is in the first line of the display and next to the arrow ←. You may have to press the arrow keys ▲ or ▼ several times to see all functions.
- ① An explanation of the output configuration can be found on ⇨ page 34.
- ☞ Choose the particular output function for the appropriate circuit and confirm with ENTER.
- ☞ In some cases are more information may be needed – depending on the output configuration. In the following, the configuration for a switch output will be exemplarily explained.

5.6.7.1. Programming of a switch output (example)

- ☞ Navigate to the menu point OUTPUT CONFIGURATION in the menu LUMIN. FUNCTIONS and confirm with ENTER.
- ☞ Select the particular output function via MAIN DISTRIBUTION > ENTER and confirm your selection with ENTER.

The display indicates:

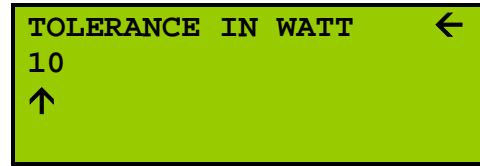
LUMIN. FUNCTIONS OUTPUT CONFIG.
[...]



- ☞ Select SWITCH OUTPUT and confirm with ENTER.

The display indicates:

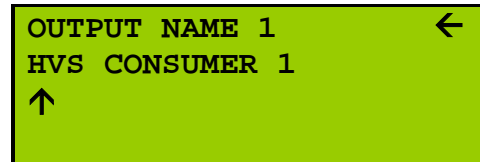
LUMIN. FUNCTIONS OUTPUT CONFIG.
[...]



- ☞ Enter the tolerance in Watt.
Define the number that is directly above the arrow ↑. With the arrow keys ◀ and ▶ you can move the arrow to the left or right.
Confirm your settings with ENTER.
- ⓘ The tolerance value refers to the appropriate output. If the Delta-value (Watt) is reached an error message will be released.

The display indicates:

LUMIN. FUNCTIONS OUTPUT CONFIG.
[...]



- ☞ You have the opportunity to determine individual names for the respective outputs.
Define the number that is directly above the arrow ↑. With the arrow keys ◀ and ▶ you can move the arrow to the left or right. Confirm with ENTER or define a second output name as required.
- ⓘ It is quicker and more convenient to change the output configuration in the online visualization. The methods described above is intended only for spontaneous changes.

<i>Chart 4: Options for the outputs' programming</i>	
NOT USED	free
SWITCH OUTPUT	Circuit monitored
PROFI OUTPUT	Mixed operation – circuit monitored
SINGLE LUMINAIRES	Single luminaire monitoring
PROFI SINGLE LUMINAIRES	Mixed operation single - luminaire monitoring
CONTINUOUS SINGLE LUMINAIRES	If the continuous light is externally switched off, the monitoring unit SET009 or SET010 is still under voltage: The stand-by luminaires can be switched off via the general lighting on the orange clamps of the SET monitoring unit.
SWITCH RELAY (NOC)	Potential-free message
SWITCH RELAY (NCC)	Potential-free message

5.6.8. Assignment

① In the menu ASSIGNMENT you can assign programming's of inputs to particular outputs, whereby they are defined as following:

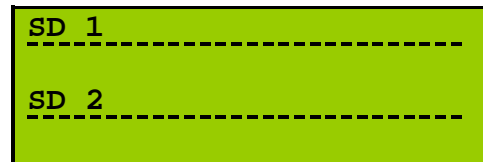
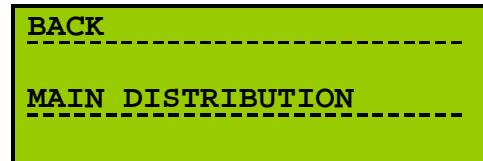
X assigned

_ non-assigned

☞ Navigate to the menu ASSIGNMENT and confirm with ENTER.

The display indicates the main-distribution and all sub-distributions:

LUMIN. FUNCTIONS ASSIGNMENT

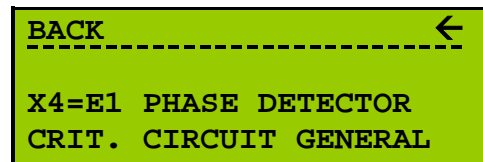


① By selecting and confirming BACK you will be returned to menu ASSIGNMENT.

☞ Select the main-distribution and confirm your selection by pressing ENTER.

The display indicates the input configurations:

LUMIN. FUNCTIONS ASSIGNMENT
[...]



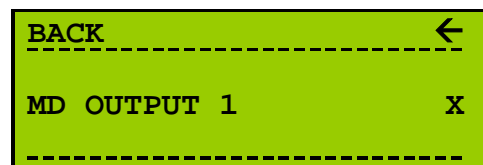
☞ Select the input configuration that is assigned to the output concerned.

An overview of the inputs 1 to 4, which are programmed by the manufacturer, can be found on page 31.

Press the arrow keys ▼ repeatedly until the particular final circuit is in the first line of the display and selected by the arrow ←. Confirm with ENTER.

The display indicates a list of all outputs:

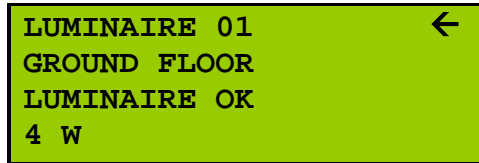
LUMIN. FUNCTIONS ASSIGNMENT
[...]



☞ Press the arrow keys ▼ until the particular final circuit that you would like to assign to the input configuration, is in the first line of the display and selected by the arrow ←. Confirm with ENTER.

the respective
final circuit

Performance of
the respective
luminaires and
their status (OK
or luminaire
error)



```
LUMINAIRE 01 ←  
GROUND FLOOR  
LUMINAIRE OK  
4 W
```

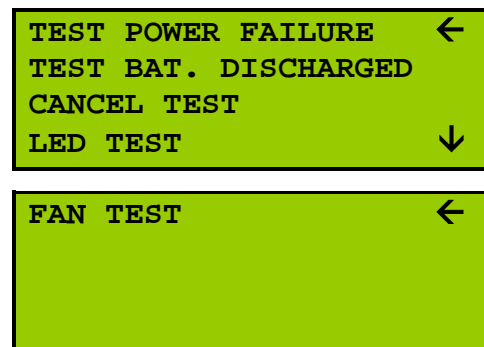
- ① The list contains the total performance of the circuits and the individual luminaires with their specific values and their status.
In the case of any error the message LUMINAIRE ERROR will be indicated.
- ☞ By pressing the ENTER key you return to the circuit selection.

5.7. TEST FUNCTIONS

- ① In the menu TEST FUNCTIONS the following tests are available:
 - Test power failure
 - Test battery (deep-)discharged
 - Cancelling tests
 - LED Test
 - Fan test
- ☞ Navigate to the menu point TEST FUNCTIONS and confirm with ENTER.

The display indicates:

TEST FUNCTIONS



5.7.1. Test power failure

- ☞ Choose the option TEST POWER FAILURE and confirm with ENTER.
- ① The power failure test starts: the system switches the final circuits in battery mode for 60 seconds.
- ☞ The LEDs „collective error“ and „discharging“ of the functional block diagram blink.
The menu point MEASURED VALUES appears, indicating the current battery voltage.

5.7.2. Test battery (deep-)discharged

- ☞ Select the menu point TEST BAT. DISCHARGED (Test battery deep-discharging) and confirm with ENTER.
- ☞ The menu point MEASURED VALUES appears and the current battery voltage will be decreased by the test software (simulation).
- ① The message BAT.DISCHARGED appears and the unit will automatically switch the battery-deep-discharge contacts.
The error message BAT.DISCHARGED remains until it is confirmed via the menu point ERRORS.

5.7.3. Cancelling tests

- ☞ If you wish to cancel the test prematurely press the MENU-button.
Navigate to TEST FUNCTIONS > CANCEL TEST and confirm with ENTER.
- ⓘ The test will be cancelled and the unit returns in the mains mode.
- 📄 The cancellation will be saved in the logbook.

5.7.4. LED Test

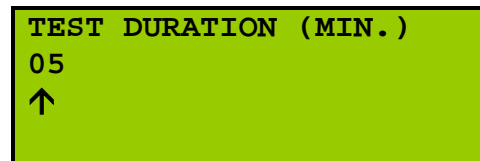
- ☞ Select the menu point LED TEST ← and confirm with ENTER.
- 📄 All LED blink and all available signs will be displayed.
Verify by a visual check the correct indication of all signs and the functionality of the LEDs.

5.7.5. Fan Test

- ☞ Select the menu point LÜFTER TEST ← and confirm with ENTER.

The display indicates:

TEST FUNCTIONS FAN TEST



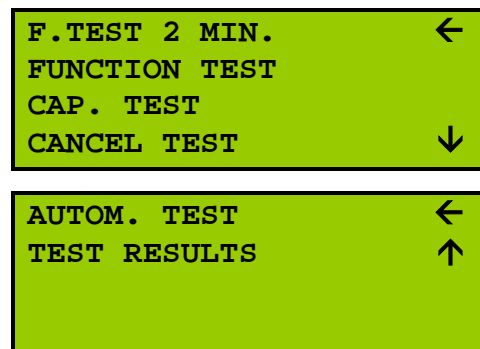
- ☞ If the test duration (here 5 Minutes) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ← and ➤ you can move the arrow to the left or right. Confirm with ENTER.
- ☞ Pressing the ENTER-button starts the test immediately.
The fan is activated and can be verified by a visual control.

5.8. FUNCTION CONTROL

- ① In the menu FUNCTION CONTROL the following tests are available:
 - Function test 2 min. (switch-over from mains to battery – duration: 2 minutes)
 - Function test (switch-over from mains to battery – duration: free to define)
 - Capacity test
 - Automatic test
- ☞ Navigate to the menu FUNCTION CONTROL and confirm with ENTER.

The display indicates:

FUNCTION CONTROL



5.8.1. Function test 2 min.

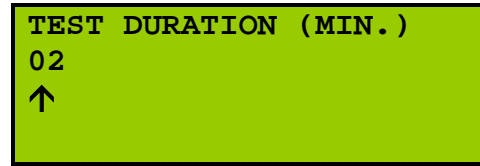
- ① During this test, the switch-over from mains to battery mode is checked for the determined duration of 2 minutes.
Select the menu point FUNCTION CONTROL to change this test duration manually.
- ☞ F.TEST 2 MIN. is in the first line of the display and selected by the arrow ←.
Pressing ENTER starts the switch-over immediately for 2 minutes.
- ☰ The LED „unit on“ flashes green. The LED „discharge“ flashes red.
The menu point MEASURED VALUES appears for the indication of the current power voltage.

5.8.2. Function test

- ① The test duration of the function test can be changed in the menu FUNCTION TEST. In addition, the switch-over can be started here.
The test duration of 2 minutes is programmed by the manufacturer. It is recommended that the test duration does not exceed 2 minutes as this would lead to premature aging of the batteries.
Exception: If there is a battery monitoring module (BEB18) the test duration must be at least 15 minutes.
- ☞ Select the menu point FUNCTION TEST and confirm with ENTER.

The display indicates:

FUNCTION CONTROL FUNCTION TEST



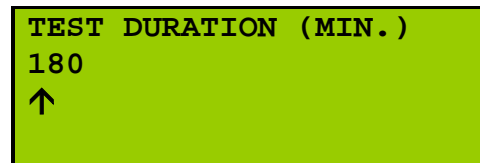
- ☞ If the test duration (here 2 minutes) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ◀ and ▶ you can move the arrow to the left or right.
Confirm with ENTER.
- ⓘ The test can be prematurely cancelled by pressing ENTER. However, you are strongly recommended to run this test through the end.
- ☰ The menu point MEASURED VALUES appears.
The LED „unit on“ flashes green. The LED „discharge“ flashes red.
- ⓘ If the test is not successful the error message TEST CANCELLED appears in the display. In this case, select the menu point TEST FUNCTIONS > TEST RESULTS (p. 45) to analyse the reason for the failure.
- ⓘ If the system is in the mode of boost charging, switched off, or has an error, then the display indicates: FUNCTION CONTROL LOCKED.
In this case it is not possible to carry out any test at all.
To recognize the interlock much faster, print the system state. To do so, choose the option SYST.STATE PRINTOUT (⇒ page 48) in the menu GENERAL OPTIONS. The current system state will be printed.

5.8.3. Capacity test

- ☞ Select the menu point CAPACITY TEST and confirm with ENTER.

The display indicates:

FUNCTION CONTROL CAPACITY TEST



- ☞ If the test duration (here 180 Minutes) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ◀ and ▶ you can move the arrow to the left or right. Confirm with ENTER.
- ⓘ The capacity test will be carried out for the determined duration.
- ☰ The menu point MEASURED VALUES appears in the display. Here you can see all test results concerned.
- ☞ The test can be prematurely cancelled by pressing ENTER.
- ⓘ If the test is not successful the error message TEST CANCELLED appears in the display. In this case, select the menu point TEST FUNCTIONS > TEST RESULTS (p. 45) to analyse the reason for the failure.

- ① If the system is in the mode of boost charging, switched off, or has an error, then the display indicates: FUNCTION CONTROL LOCKED.

In this case it is not possible to carry out any test at all.

To recognize the interlock much faster, print the system state. To do so, choose the option SYST.STATE PRINTOUT (⇒ page 48) in the menu GENERAL OPTIONS. The current system state will be printed.

- ! The test duration will not be saved after re-starting the system. The test duration (2/3 of the nominal battery voltage) programmed by the manufacturer is shown again. The test duration has to be changed manually.

5.8.4. Cancel test

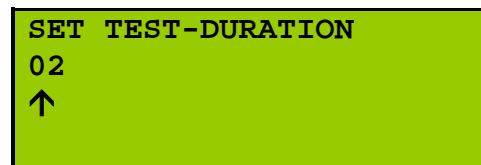
- ☞ Select the menu point CANCEL TEST.
Pressing the ENTER button finishes the test which is running with the message MANUAL CANCEL.

5.8.5. Automatic test

- ① During the automatic test (VDE requirement) the switch-over from mains to battery and battery to mains is checked.
- ☞ Select the menu AUTOM. TEST← and confirm with ENTER.
- ☞ Confirm the menu point SET TEST-DURATION with ENTER.

The display indicates:

FUNCTION CONTROL AUTOM. TEST



- ☞ If the test duration (here 2 Minutes) is to be accepted confirm with ENTER.
- ☞ If the test duration is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ← and ➤ you can move the arrow to the left or right.
Confirm with ENTER.
- ① The test time is defined in the menu TIMERS (⇒ page 60).

5.8.6. Test results

- ☞ Select the menu TEST RESULTS and confirm with ENTER.
- ① The latest results will be shown in the display.
- ☞ To leave this menu press MENU.

5.9. SYSTEM STATE

☞ Press the MENU-button and select the menu point SYSTEM STATE.

① Now you can see the current state of the system.

You get information as to

- whether the system is switched on or off,
- whether and which tests are running
- whether the system is in mains or battery operation mode
- whether there is an automatic charge boost
- how many hours the system has been in use
- how many hours the battery (in test mode) has been in use

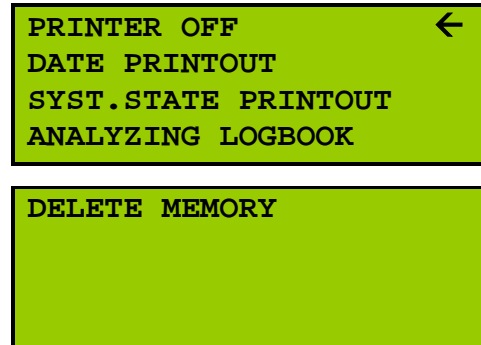
☞ Press the arrow keys ▼ and ▲, to scroll between the system indications.

5.10. GENERAL OPTIONS

- ☞ Press the MENU key. Select the menu point GENERAL OPTIONS and confirm with ENTER.

The display indicates the sub-menu:

GENERAL OPTIONS



5.10.1. Switching the printer on/ off

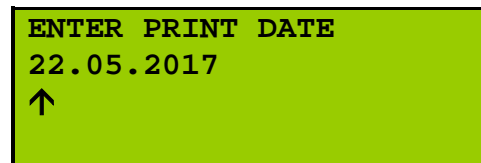
- ☞ Select the menu PRINTER OFF.
By pressing the ENTER key you can switch the printer state from PRINTER ON to PRINTER OFF and vice versa – if a printer is available and connected.⁵
If PRINTER ON is in the first line of the display, press the MENU button.
- ① The printer prints all activities that are saved in the memory.
- ☞ If the printer is switched off the printer prints its own internal printer memory.

5.10.2. Date printout

- ☞ Select the menu point DATE PRINTOUT and confirm with ENTER.

The display indicates:

GENERAL OPTIONS DATE PRINTOUT

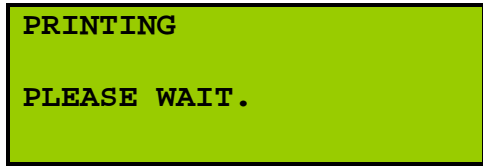


- ☞ If the print date is to be accepted confirm with ENTER.
- ☞ If the print date is to be changed, enter the minute numbers via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys < and > you can move the arrow to the left or right. Confirm with ENTER.
- ☞ After entering the date the printout will be carried out.

⁵ If no printer is available the message remains on PRINTER OFF even though pressing the menu point.

The display indicates:

GENERAL OPTIONS DATE PRINTOUT
ENTER PRINT DATE



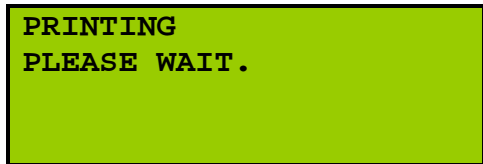
- ① If the printer is not connected you will be returned to the previous menu. If no data is available the message NO DATA FOR PRINTING appears.
- ☞ By pressing the ENTER key you can reach the previous menu.

5.10.3. System state printout

- ☞ Select the menu SYST.STATE PRINTOUT and confirm with ENTER. A printout of the current system state will be carried out.

The display indicates:

GENERAL OPTIONS SYST.STATE PRINTOUT



- ① If the printer is not connected you will be returned to the previous menu. If no data are available the message NO DATA FOR PRINTING appears.
- ☞ By pressing the ENTER key you can reach the previous menu.

5.10.4. Analysing logbook

- ☞ Select the menu point ANALYSING LOGBOOK and confirm with ENTER.

The display indicates:



GENERAL OPTIONS ANALYSING LOGBOOK



- ☞ If the date is to be accepted confirm with ENTER.
If the date is to be changed, enter the new date via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys < and > you can move the arrow to the left or right. Confirm with ENTER.
- ① All entries will be searched concerning the date given.
You can see the progress by the increase of the numbers. This process might be time consuming.
- ☞ The logbook of the defined period will be shown when all entries have been searched.

A dotted line separates the entries. You can scroll between the entries by pressing the arrow keys \blacktriangledown and \blacktriangle .

5.10.5. Delete the memory

-  Select the menu point DELETE MEMORY and confirm with ENTER.
-  The printer storage will be deleted. If the printer is not connected you will be returned to the previous menu.

The deleting process will be stored in the logbook. If you wish to analyse or print the logbook the message MEMORY DELETED will be printed.

This menu point only deletes the memory of the printer; the logbook is independent.

5.11. SYSTEM FUNCTIONS

① In the menu SYSTEM FUNCTIONS several options are available:

- See the version information
- Set date and time
- Restart the system
- Shut down the system
- See the maintenance interval
- Measurement correction
- Module management
- Display management
- Define a place of assembly
- Define a switch time of DC>AC
- Define mains switch back
- Copy the logbook
- Copy battery parameters
- Delete battery counter
- Language
- Change password

☞ Press the MENU key. Select the menu point SYSTEM FUNCTIONS and confirm with ENTER.

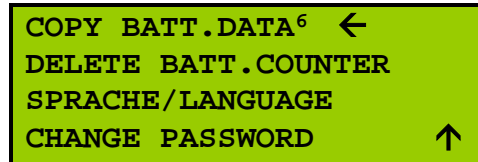
The display indicates:

SYSTEM FUNCTIONS

VERSION INFO	←
SET DATE/TIME	
SYSTEM RESTART	
SYSTEM SHUTDOWN	↑

SERVICE PERFORMED	←
MEASUREMENT CORR.	
MODULE MANAGEMENT	↑
DISPLAY MANAGEMENT	↓

PLACE OF ASSEMBLY	NO
SWITCHTIME DC>AC	
MAINS SWITCHBACK	↑
COPY LOGBOOK	↓



5.11.1. Version info

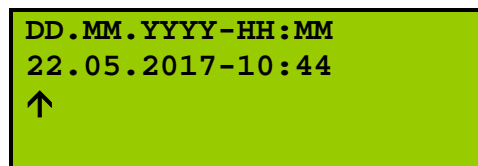
- ☰ Select the menu point VERSION INFO and confirm with ENTER. Now you can gain various information about your system concerning:
 - the kind of system
 - the system type and version
 - the battery type

5.11.2. Set date/time

- ☞ Select the menu point SET DATE/TIME and confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS SET DATE/TIME



- ☞ If the date is to be accepted confirm with ENTER.
 If the date is to be changed, enter the new date via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys < and > you can move the arrow to the left or right.
 Confirm with ENTER.
- ☞ The new date and time will be accepted when you have entered the parameters and confirmed with ENTER.

5.11.3. System restart

- ☞ Select the menu point SYSTEM RESTART and confirm with ENTER.
- ⓘ A restart will be carried out immediately.
 The restart is completed when the MEASURED VALUES menu appears
- ⓘ After the re-start all defined test durations of appropriate tests and settings (function test and capacity test) will be reset to the manufacturer's settings.
 The re-configuration can be carried out in the menu FUNCTION CONTROL (⇒ page 43 pp.)
- ⓘ The restart will be saved in the logbook.

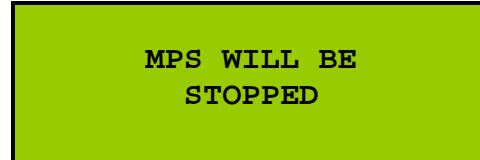
⁶ This menu only appears if a battery single bloc monitoring module is part of the system.

5.11.4. System shutdown

- ① Before shutting down your system, please take the following into consideration:
The restart of the system is not possible via the display but on the unit itself.
- ☞ Select the menu SYSTEM SHUTDOWN and confirm with ENTER.

The display indicates:

SYSTEM FUNKTIONEN SYSTEM SHUTDOWN



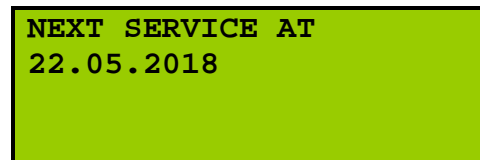
- ☞ All programmes will be closed.
- ☞ If all LEDs are flashing in the display the system can be switched to voltage-free. Make sure that final circuits remain switched on!
- ⚠ Never switch the mains on or off while the system is energized (with the final circuits switched on). For the battery supply note: connection cables to the batteries must never be separated from or connected to the battery rack while they are energized and the battery fuses in the unit must never be opened or closed while energized!
- Danger of injury or death by electric shock!
- ⚠ Only qualified electricians may carry out work on the 230 V mains. Any electrical installation (including any signal/control cables) must be carried out in compliance with the relevant guidelines and standards. National guidelines and regulations applicable in the country in which the system is installed and operated are to be observed.
- ☞ The restart of the system can be carried out at the system:
Open the fuses -F18 and -F19 and close them after 10 seconds.

5.11.5. Service performed

- ☞ Select the menu point SERVICE PERFORMED if a maintenance has taken place. Confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS SERVICE PERFORMED



- ① The maintenance takes place annually. Of course, the maintenance can be carried out early – then, the menu point SERVICE PERFORMED must be confirmed with ENTER. A password is necessary to carry out this change.
- ① When the date of the next maintenance comes, a message appears in the display: PERFORM MAINTENANCE.

- ☞ Press the arrow keys **▲** and **▼** until the particular module that you wish to activate is in the first line of the display, for instance „MFT-Module 01“.

**SYSTEM FUNCTIONS MODULE MANAGEMENT
MFT-MODULE 01**

MFT-MODULE 01	OFF	←
HVS X4=EINGANG	ON	↑
HVS A31 EINGANG	ON	
EGM 01	ON	↓

- ☞ Switch between ON and OFF by pressing the ENTER button. Press the arrow keys **▲** repeatedly until READY is in the first line of the display and marked by **←**. Confirm with ENTER.
The module required is now established.

5.11.8. Display management

- ① In larger buildings, it may be temporarily advisable to establish a second display to monitor and control the unit more conveniently.
After the registration of the second display both displays are completely functional.
- ☞ Select the menu point DISPLAY MANAGEMENT and confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS DISPLAY MANAGEMENT

READY	
DISPLAY 02	OFF

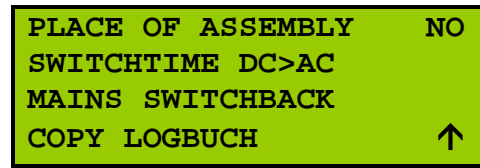
- ☞ If you select DISPLAY 02 and press ENTER repeatedly you can switch between OFF (non-available) and ON (=available).
Select READY and confirm with ENTER to activate the current choice.
- ① If there is no second display connected the red LED „collective error“ flashes in the display and an acoustic warning sign is given.
The message “Communication with display 2 disturbed” appears in the menu ERRORS

5.11.9. Place of assembly

- ① In the case of a power failure all stand-by luminaires will be switched on.
If the menu point PLACE OF ASSEMBLY is activated (“YES”) all stand-by luminaires remain lighting – even though the duration of switch-back has expired. The error message „SL MAINS OPERATION ON QUIT“ appears. The LED „mains operation“ lights orange in the block diagram.
Confirm the error message via the menu point SL OFF (⇒ page 59).
- ☞ Press the arrow keys **▼** and **▲** repeatedly until the menu point PLACE OF ASSEMBLY is in the first line of the display.

The display indicates:

SYSTEM FUNCTIONS



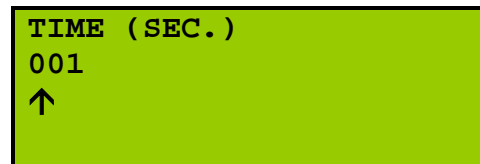
- ☞ Press ENTER to select either YES or NO.
- ☞ Press the menu button to save your selection.

5.11.10. Switchtime DC>AC

- ☞ Select the menu point SWITCHTIME DC>AC and confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS SWITCHTIME DC>AC



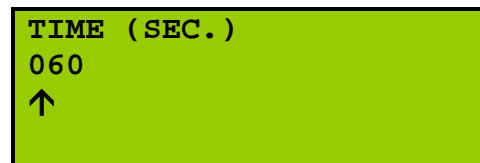
- ☞ If the switch time is to be changed, enter the seconds via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys < and > you can move the arrow to the left or right. Confirm with ENTER.
- ☞ Confirm with ENTER.

5.11.11. Switching back the mains

- ① When the mains return the switch on of the luminaires is delayed.
 The duration of this deceleration depends on the type of luminaire and can be freely determined in this menu.
- ☞ Select the menu point MAINS SWITCHBACK and confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS MAINS SWITCHBACK



- ☞ Enter the desired time in seconds.
- ☞ If the switch time is to be changed, enter the seconds via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys < and > you can move the arrow to the left or right.
 Confirm with ENTER.

5.11.12. Copying Logbook

- ① Logbook data can be transmitted to an external memory device via the menu point COPY LOGBOOK.
A precondition for this is that a USB device has been inserted in the corresponding USB port of the processor MPS 3800, or MPS3900 (depending on the version).
If this is not the case, a signal sounds.
- ☞ Select the menu point COPY LOGBOOK and confirm with ENTER to save the log book data on the external USB device.
- ① The data can be analysed e.g. via MS Excel.

5.11.13. Copying battery data (optional)

- ① The two preconditions for saving battery data are:
 - (1) that the unit has a battery (single bloc) monitoring module (BEB18)
 - (2) that a USB device with FAT32-format (standard) has been inserted in the corresponding USB port of the processor MPS 3800, or MPS3900 (depending on the version). If this is not the case, a signal sounds.
- ☞ Select the menu point COPY BATT.DATA and confirm with ENTER to save the battery data on the external USB device.
- ① The data can be analysed e.g. via MS Excel.

5.11.14. Resetting battery counter

- ① After exchanging batteries, the battery counter can be reset by entering the appropriate password.
This option is password protected and only accessible for a service electrician.

5.11.15. Selecting the language

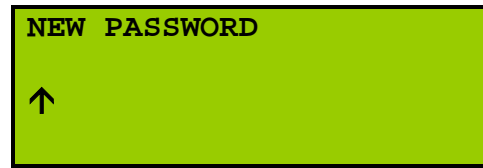
- ☞ Choose between the following languages and confirm your selection with ENTER:
 - German
 - English
 - Russian
 - Polish

5.11.16. Changing the password

- ☞ Select the menu point CHANGE PASSWORD and confirm with ENTER.

The display indicates:

SYSTEM FUNCTIONS CHANGE PASSWORD



- ☞ You can enter up to 8 digits. Confirm the new password with ENTER.
The password can be deleted by entering the current password and then the code: 00000000 (8X0), if you have previously registered with the still valid password.
- ① The menus **FUNCTION CONTROL** and **SYSTEM FUNCTIONS** can be accessed only by entering the password.

5.12. SYSTEM SETTINGS

ⓘ **This menu is password-protected.**



The parameters described in this chapter are only to be changed by service electricians. Incorrectly entered parameters can lead to damages of the batteries and final circuits.

☞ Press the menu button to return to the main menu.

☞ Press the arrow key \blacktriangle repeatedly until SYSTEM SETTINGS appears in the first line of the display and is marked by \leftarrow .

Confirm with ENTER.

The display indicates the sub-menu:

SYSTEM SETTINGS

```

NO. OF CELLS ←
BATT.MIDDLE CELLS 1
BATT.MIDDLE TLRNC
CCU 1 UNIT SHUNT ↓
    
```

```

CCU 1 BATT.SHUNT ←
CCU 1 MAX.CHARGCURRENT
CCU 1 ACTUAL VOLTAGE
CCU 1 ACTUAL CURRENT
    
```

5.12.1. Number of cells

☞ NO. OF CELLS is in the first line of the display and marked by \leftarrow .

Confirm with ENTER.

The display indicates:

SYSTEM SETTINGS NO. OF CELLS

```

ENTER NOMINAL VALUE
108
↑
    
```

☞ Enter the NO. OF CELLS via the key pad and confirm with ENTER.

ⓘ The set value is sent directly to the charger. A further setting of the charger is not necessary.

5.12.2. Cells proportion of the battery middle

ⓘ Here the proportion of the cells can be changed.

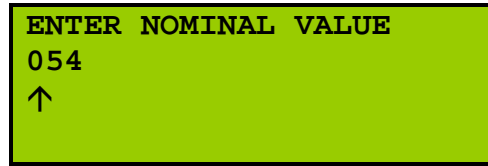
A change is always related to the minus pole of the battery (e.g. with 54 cells: +30 cells, -24 cells).

☞ Return to the menu SYSTEM SETTINGS. Select the menu point BATT.MIDDLE CELLS and confirm with ENTER.

The display indicates:

SYSTEM SETTINGS

BATT. MIDDLE CELLS X



☞ Enter the nominal value via the keypad and confirm with ENTER.

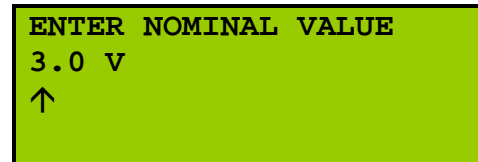
5.12.3. Tolerance of the battery middle

- ① Here the tolerance of the battery monitoring can be entered in volt.
The value entered is related to the plus and minus pole of the monitored battery.
- ☞ Return to the menu SYSTEM SETTINGS. Select the menu point BATT.MIDDLE TLRNC (=Battery middle tolerance) and confirm with ENTER.

The display indicates:

SYSTEM SETTINGS

BATT.MIDDLE TLRNC



☞ Enter the nominal value via the keypad and confirm with ENTER.

5.12.4. Charger settings

- ① In the menu SYSTEM FUNCTIONS several options are available for the charger (CCU):
 - unit shunt (CCU 1 UNIT SHUNT)
 - battery shunt (CCU 1 BATT.SHUNT)
 - max. charge current (CCU 1 MAX.CHARGE CURRENT)
 - actual voltage (CCU 1 ACTUAL VOLTAGE)
 - actual current (CCU 1 ACTUAL CURRENT)

These settings are ensued by the manufacturer.

Changing them is necessary only if the assembly of the system is to be carried out.

5.13. STAND-BY LIGHT (SL) ON/OFF

- ① If there is a power failure in the main distribution of a place of assembly all stand-by luminaires are activated even though the mains switchback time is expired.
The error message „SL MAINS OPERATION ON QUIT“ appears. The LED „mains operation“ lights orange.
Confirm the error message via the menu point SL OFF (⇒ page 59).
- ☞ Select the menu point SL OFF and confirm with ENTER.

The display indicates:

SL OFF



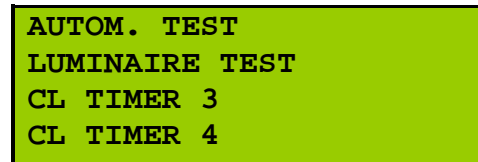
**SL WAS
SWITCHED OFF**

5.14. TIMERS

- ① In the menu TIMERS you can freely program three timers (timer 3 – 5).
Timers 1 and 2 are assigned to the functions „automatic test“ and „luminaire test“.
By default, all timers are deactivated.
Select the menu TIMERS and confirm with ENTER.

The display indicates:

TIMERS



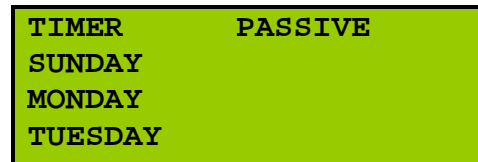
5.14.1. Timer: Automatic test

- ① The automatic test can be initiated automatically.
Select the desired execution time and date required. By default, the times for the automatic test are programmed by the manufacturer: Tuesday, 06:20 am
The test duration can be defined in the menu test functions (⇒ page 45)
- ☞ Select the menu point AUTOM.TEST confirm with ENTER.

The display indicates:

TIMER

AUTOM. TEST



- ☞ Activate or deactivate the timer by pressing ENTER.
The indication switches between ACTIVE and PASSIVE.
ACTIVate the timer.
- ☞ Press the arrow keys ▲ and ▼ repeatedly until the day required appears in the first line of the display e.g. Tuesday.
Confirm with ENTER.

The display indicates:

TIMER

AUTOM. TEST
TUESDAY



- ☞ By default, the test will be started on Tuesday at 6:20 am⁷.

⁷ The system is organized in 24-hour format

- ☞ If the test time is to be changed, enter the number of minutes via the key pad. Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right. Confirm with ENTER.
- ⓘ The display returns to the previous menu.
The parameters (day and time) are now defined.

5.14.2. Timer: luminaire test

- ⓘ In this menu you can define the dates and times at which the luminaire test is to be initiated automatically.
You can start the luminaire manually in the menu LUMINAIRE FUNCTIONS (page ⇨ 24).
- ☞ Select the menu point LUMINAIRE TEST and confirm with ENTER.
- ☞ Define the date and time as described in chapter 5.14.1, page 61.
- ⓘ By default, the switch timers are defined with the value 99:99 from Monday to Sunday. In this case the automatic tests will not be carried out – even though the timer is activated.

Only if the numeric value is ≤ 24:00 and the TIMER ACTIVE is set the timers will react.

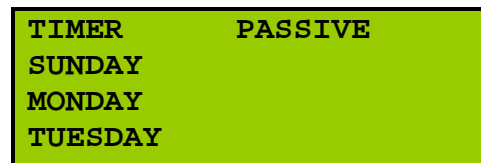
5.14.3. Programming timers with free assignments

- ⓘ In the following the programming for timer 3 is explained exemplarily.
- ☞ Select the menu CL TIMER 3 and confirm with ENTER.

The display indicates:

TIMER

CL TIMER 3

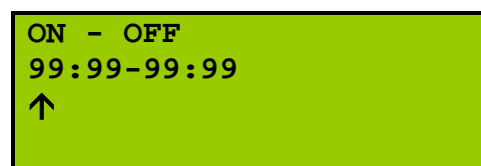


- ☞ Select the menu TIMER PASSIVE. By pressing ENTER you can switch between PASSIV and ACTIVE.
ACTIVate the timer.
- ☞ Press the arrow keys ▲ and ▼ repeatedly until the day required appears in the first line of the display.
Confirm with ENTER.

The display indicates:

TIMER

CL TIMER 3
MONDAY



- ☞ Program the timer by entering the number of minutes via the key pad.

Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right. Confirm with ENTER.

① The display returns to the previous menu. The parameters of timer 3 are now defined and activated.

☞ Proceed as described above with the other timers.

① By default, the switch timers are defined with the value 99:99 from Monday to Sunday. In this case the automatic tests *will not be* carried out – even though the timer is activated.

Only if the numeric value is $\leq 24:00$ and the TIMER ACTIVE is set the timers will react

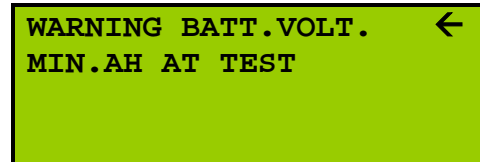
⇒ The timers can be assigned in the menu ASSIGNMENT (⇒ page 38).

5.15. MARGINAL VALUES

- ① In this menu the conditions for cancellation are defined which apply to capacity tool.
- ☞ Select the menu MARGINAL VALUES and confirm with ENTER.

The display indicates:

MARGINAL VALUES

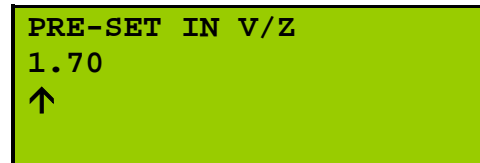


5.15.1. Warning battery voltage

- ① If the value defined here is reached in the capacity test the error message „battery deep-discharged“ appears. The test will be cancelled and a mains switchback will ensue.
- ☞ The cancel will be saved in the logbook.
- ☞ Confirm the menu point WARNING BATT.VOL. with ENTER.

The display indicates:

MARGINAL VALUES WARNING BATT.VOLT.



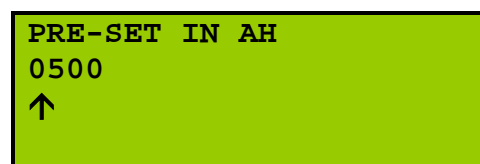
- ☞ Confirm the settings you require with ENTER.
- ☞ If needed, the values can be changed.
Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right.
Confirm with ENTER.

5.15.2. Min. ampere-hours in the test

- ① If the value defined here is reached in the capacity test the test will be cancelled and a mains switchback ensue. The cancel will be saved in the logbook.
- ☞ Confirm the menu point MIN.AH IM TEST with ENTER.

The display indicates:

MARGINAL VALUES MIN.AH AT TEST



- ☞ Confirm your desired setting with ENTER.

- ☞ The values can be changed as required.
Define the number that is directly above the arrow ↑. With the arrow keys ← and → you can move the arrow to the left or right. Confirm with ENTER.

5.16. CONTINUOUS LIGHT (CL) ON/OFF

- ① You can switch the continuous light (CL) on or off via this menu point.
If a control panel (MFT5) is connected to the system the switching can ensue via both devices parallel.
The pre-condition for this switching option is that there is no bridge onto the terminal -X1:E4 (standard programming).
- ☞ Confirm the menu point CL ON/OFF with ENTER.

The display indicates:

CL ON/OFF



- ☞ By confirming CL ON with ENTER the continuous light will be switched on immediately.
The menu text is now CL OFF – the functionality changes correspondingly.

6. APPENDIX

6.1. Errors and troubleshooting

- ① All bus errors will be indicated according to the appropriate modules. The LEDs are arranged vertically and located on the right side.

<i>Chart 5: Errors and troubleshooting</i>			
Error/ error message	Visual depiction	Reason	Measurements
<p>Final circuit: no current</p> <p>(This error can occur after the calibration or luminaire test.)</p>	<p>The LED on the ABG8-module =A50, -A51, -A52, etc. under the output relay are flashing red.</p>	<p>The fuse of the final circuit is defect.</p> <p>OR</p> <p>No final circuits are connected.</p> <p>For instance, an 8W-luminaire is connected whilst the measured value is set at e.g. 10 W.</p> <p>OR</p> <p>The initial calibration is not carried out, yet. Please note the instructions on page 19.</p>	<p>Please check all luminaires and the appropriate fuses of the final circuits.</p>
<p>Output XX Luminaire error</p> <p>(This error can occur only after a luminaire test.)</p>	<p>The LEDs on the ABG8-module =A50, -A51, -A52, etc. under the output relay are flashing red.</p>	<p>There is a circuit/luminaire error in the indicated (XX) final circuit.</p>	<p>Check all luminaires of the appropriate final circuit and replace defect luminaires if necessary.</p> <p>The error must be confirmed. Only then will the menu LUMINAIRE TEST be available.</p> <p>Scroll down to "End of list"</p>
<p>Battery voltage too low</p>		<p>There is no voltage available.</p> <p>The charge fuse -F2 is defect.</p>	<p>Check the charge fuse -F2.</p>

<i>Chart 5: Errors and troubleshooting</i>			
Error/ error message	Visual depiction	Reason	Measurements
<p>Bus error Communication is disturbed e.g. with R-module 02.</p>	<p>The upper yellow LED on module A51 is blinking once a second.</p>	<p>The bus is interrupted. OR The bus component is interrupted. OR The bus component is wrongly addressed.</p>	<p>Check the appropriate address.</p>
<p>Bus error Communication is disturbed e.g. with E-module 01.</p>	<p>The yellow LEDs for the bus communication on the input module are off or the middle LED is blinking once a second.</p>	<p>The bus is interrupted. OR The bus component is defect. OR The bus component is wrongly addressed.</p>	<p>Check the appropriate address.</p>
<p>Bus error Communication is disturbed e.g. with charging control unit -A5.</p>	<p>Message in the display: "Communication with the CCU A5 is disturbed."</p>	<p>The 485-bus of the CCU module = flat belt X2 to the unit is disturbed.</p>	<p>Reboot the CCU module. Remove the preliminary fuses (see schematic circuit diagram). If this error message returns replace the module or contact the customer support.</p>
<p>Display error Communication with the display is disturbed.</p>	<p>The display is dark. OR The second display indicates „Communication with display 1 disturbed“, or „Communication with display 2 disturbed“</p>	<p>The bus component is defect.</p>	<p>Replace the display.</p>
<p>Display error There is no scripture shown in the display.</p>	<p>All LEDs in the display are blinking and the scripture is not displayed any more.</p>	<p>The 485 bus component in the display is defect.</p>	<p>Replace the display.</p>
<p>Bus error</p>	<p>All LEDs on all modules except of CCU = -A5 are off.</p>	<p>The preliminary fuse of -G2 = phase-detector is defect.</p>	<p>Replace the fuse (see schematic circuit diagram) or the phase-detector.</p>

<i>Chart 5: Errors and troubleshooting</i>			
Error/ error message	Visual depiction	Reason	Measurements
Earth-leakage DC Confirm. With ENTER.	The following error message is indicated in the display: ERDSCHLUSS DC QUITT. MIT ENTER	There is an insulation error (final circuits or battery).	Search for the earth-leakage in the final circuits and in the battery.
Charging circuit disturbed	The LED „collective error“ is blinking.	The battery fuses - F8+ and -F9- are defect. OR The battery connection cables are defect. OR A battery bloc is defect. This error message in delayed by 5 minutes.	Check the battery fuses -F8+ and -F9-.
Luminaire test It is not possible to carry out a luminaire test.		The errors must be confirmed via the menu „errors“.	Initiate a luminaire test or calibration again.
Power failure main distribution	The LEDs „collective error“ and „discharge“ are blinking.	The transformer has no voltage. -F1= phase L1= defect	Check -F1. If -F1= OK, check the mains feed phase L1+L2+L3.
SL mains operation (switching unit is without power supply)	Die LED „collective error“ blinks.	The AC-fuses of the USE-switching unit are defect. -F14.1=Phase L2 defect AND/OR -F14.2=Phase L3 defect	Check the fuses - F14.1 and -F 14.2. If -F14.1= ok, then check the mains feed phase L1, L2, L3.

6.2. Measurements if luminaires are not recognized during the calibration of final circuits



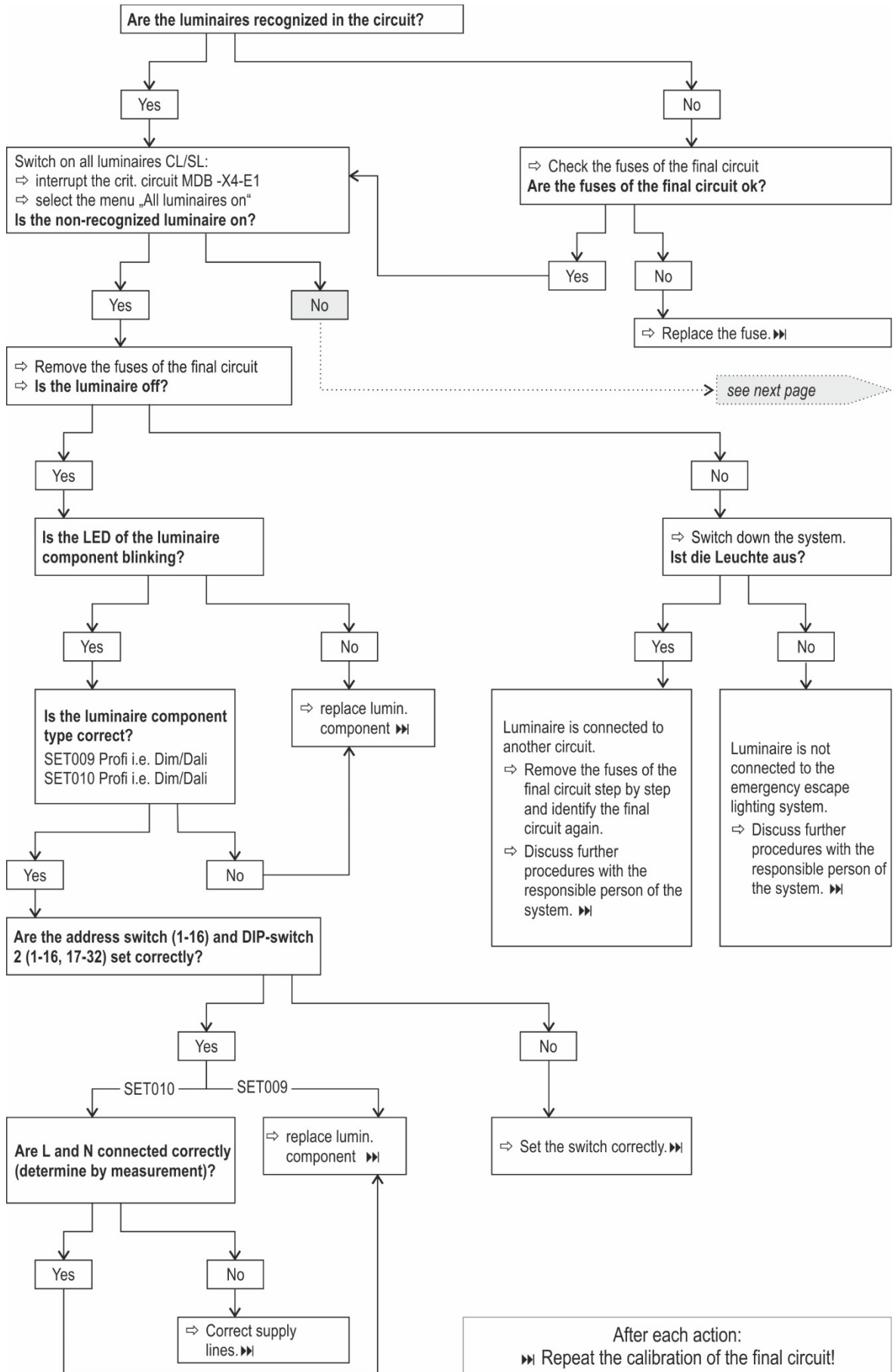
- Only qualified electricians may work on the emergency escape lighting system.
- Verify the proper condition of the electrical installation before you start working on the system
- Pay attention to measures for health and safety at work and the appropriate safety guidelines and regulations!
- Working with components that are under voltage is strictly prohibited without the appropriate safety precautions.
- Any work on luminaires must be carried out in compliance with the manufacturer's safety precautions.



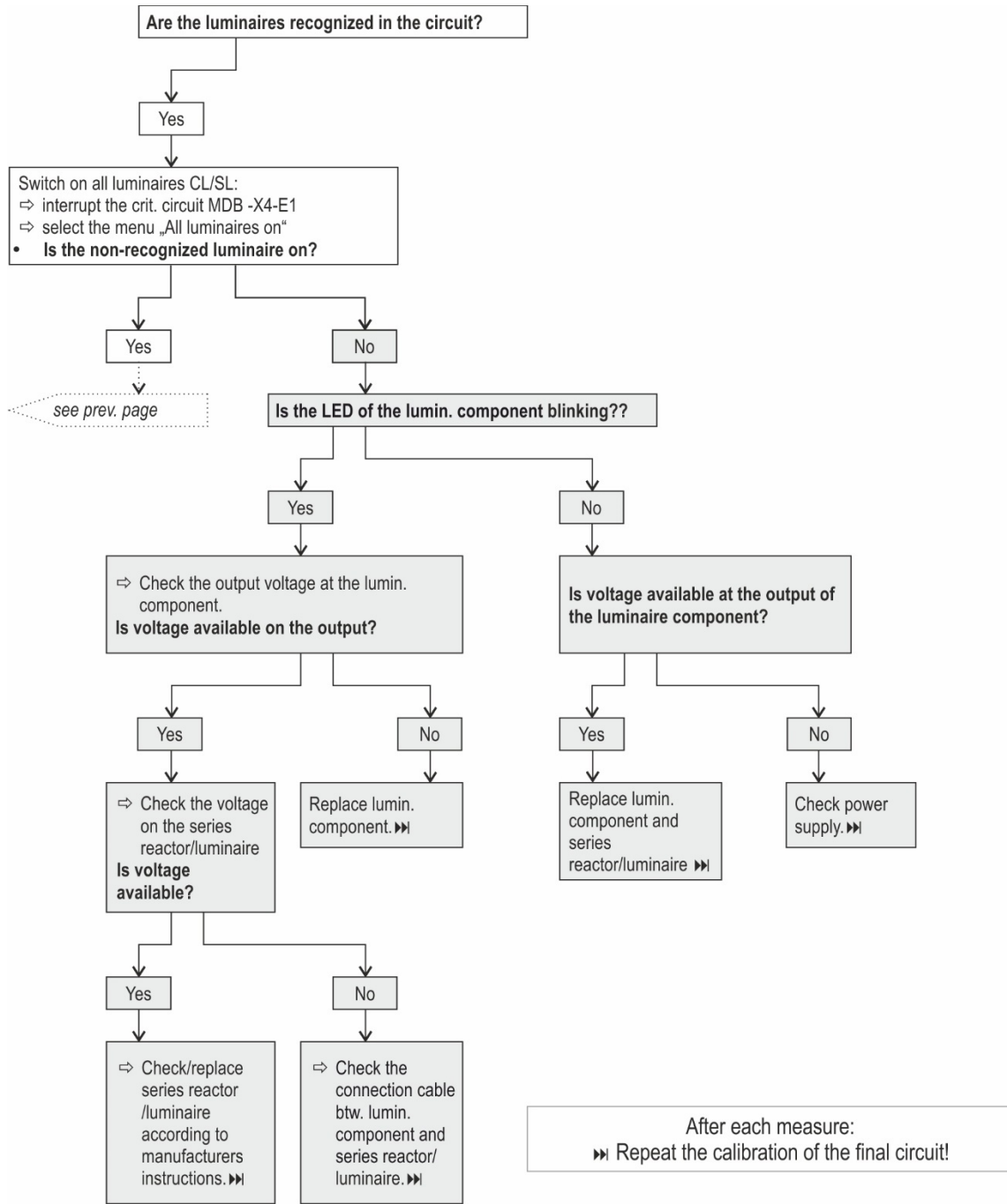
Requirements

Verify whether the following preconditions are fulfilled:

- (1) The hardware and software are adjusted to the correct luminaire components (SET009 / SET010).
 - (2) The data transfer to the luminaire components is working.
 - (3) The marginal values of the system are set so that the powers of the luminaires are recognized.
- ! Pay attention to the correct type and the associated switch settings whilst replacing luminaire components.
- ! Also, adjust the output current and output voltage while replacing LED series reactors.



Troubleshooting for non-recognized luminaires, part 1



Troubleshooting for non-recognized luminaires, part 2

6.3. List of abbreviations and glossary
in the user manual and display of the unit

Act.	Actual, meaning current or present values
AI	Analogue input
A-module	Output module (A stands for the German word "Ausgang")
Autom.	automatic
Automatic charge boost	The intention of the autom. charge boost is to reach the nominal capacity of the battery as soon as possible after discharging.
Automatic test	During the automatic test (VDE requirement) the switch-over from mains to battery and battery to mains is checked. The trigger time is defined via the menu as per chapter "timers".
Batt.	Battery
Batt. DD-Test	Battery deep-discharge test
Batt.discharg	Battery deep-discharged
Batt.middle tlrc	Battery middle tolerance
BMS	Battery monitoring system, named BEB18
Calib.	calibration
Calibration	The current value of any circuit is read and saved in the system (nominal value). In the case of single luminaire monitoring the address of the luminaire component will also be saved. The calibration is necessary for a successful luminaire test.
Cap.test	Capacity test
CCU	Charging control unit
c-current	Charging current
Charg.circuit	Charging circuit
CL	Continuous luminaire
CM-module	Control and measuring module
C-module	Control module
Com.system	Communication system
Conf.	configuration
Crit. circuit	Critical circuit
CR-module	Control relay module
CU	Charging unit
Delayed rel.	Delayed
Drawn cap.	Drawn capacity
E-module	Input module (E stands for the German word "Eingang")
F.test	Function test
I/O	IN/OUT

I-module	Input module
IO-ADR	Input/Output address
LED	Light Emitting Diode
Lumin.	Luminaire
Luminaire test	The luminaire test is intended to compare the calibrated current value and the present current value of the circuit. If the two values differ an error message will be indicated.
Man.	Manual
MD	Main-distribution
MFT	Control panel (German = Meldefertabeau)
MPS	Microprocessor
MTBM	Mean time between maintenance
NCC	Normally Closed Contact
NOC	Normally Opened Contact
O-module	Output module
PD	Phase-detector
PMM	Power measuring module
Res.	Reserve
Response lag	Response lag time
R-module	Relay module
SD	Sub-distribution
SD-Module	Sub-distribution module
SL	Stand-by luminaire
SW/U	Switching unit (USE)
Tolerance value	The tolerance value is a manually determined parameter that refers to the appropriate output. If the value is reached or exceeded an error message will be released. The tolerance value is intended to avoid error messages being sent for each defect luminaire separately.
V/Z	Volt per cell (German: Volt pro Zelle)