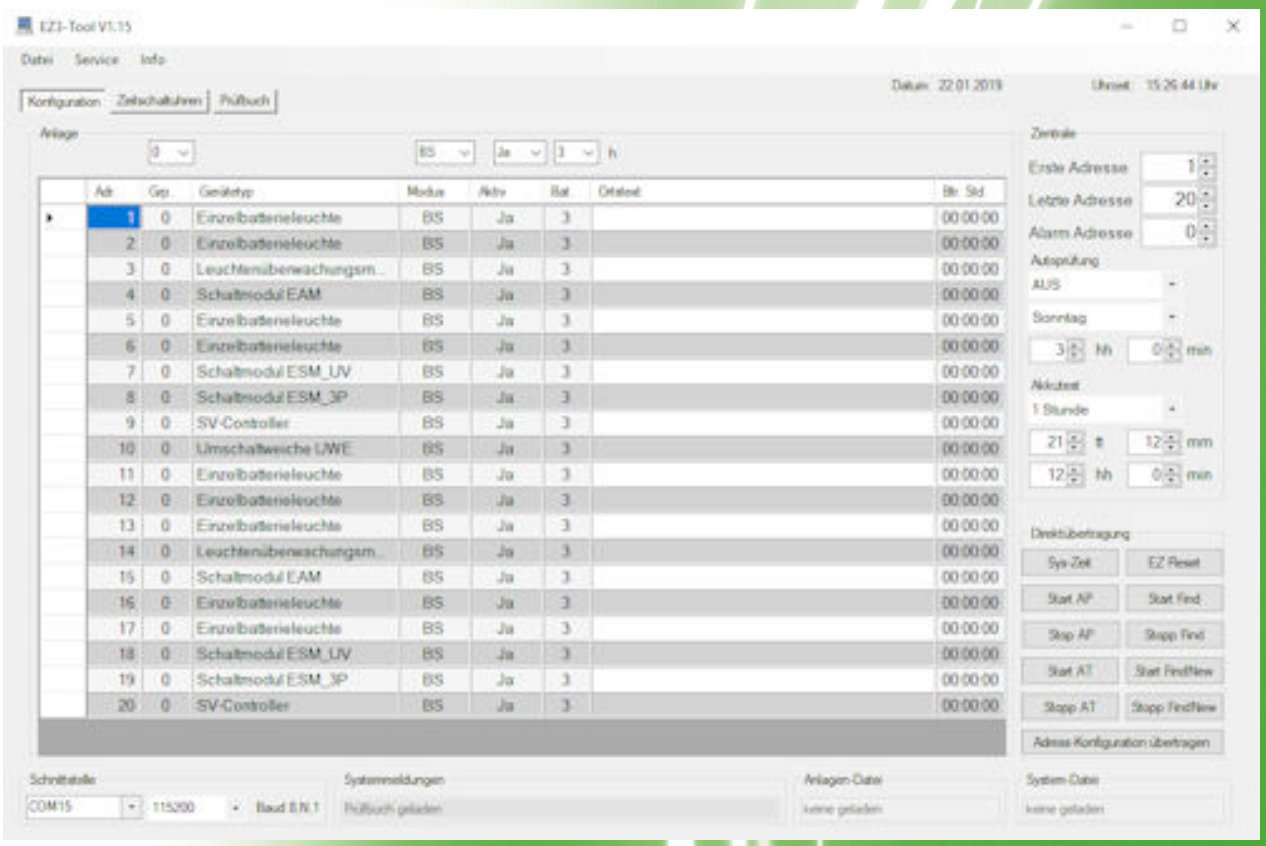
EmLOC

Emergency lighting center



Instruction manual

Status: May 2020

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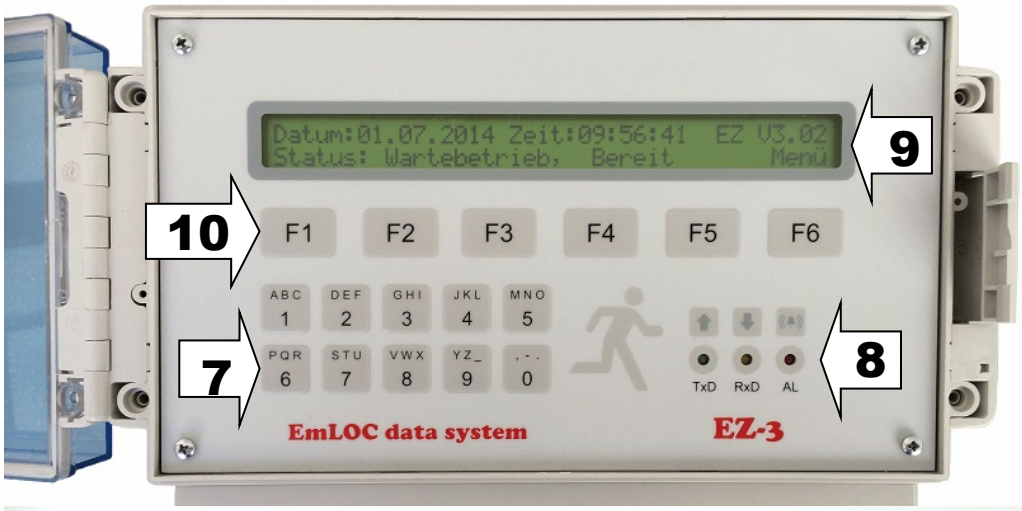
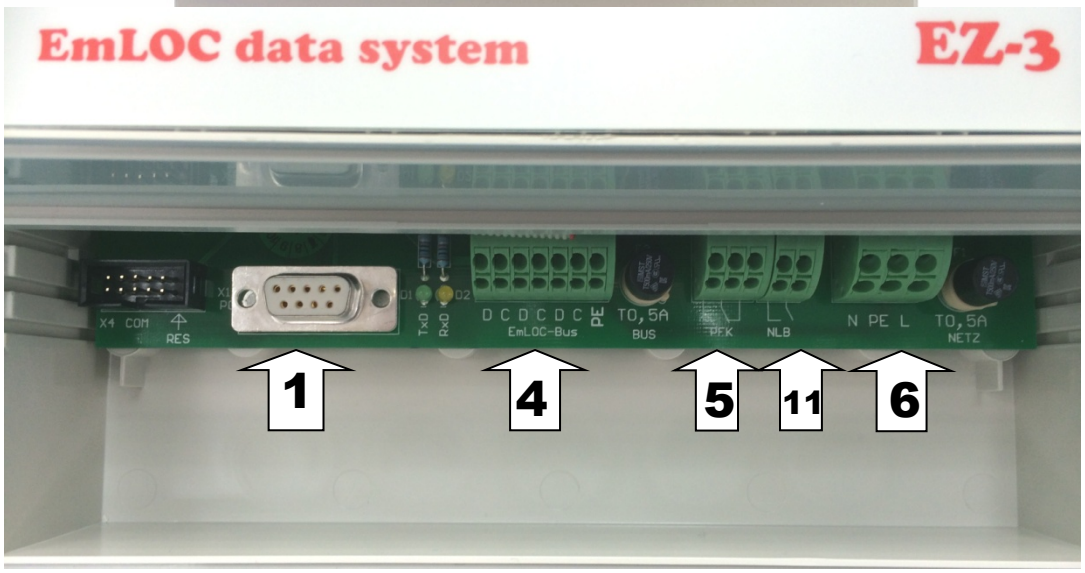
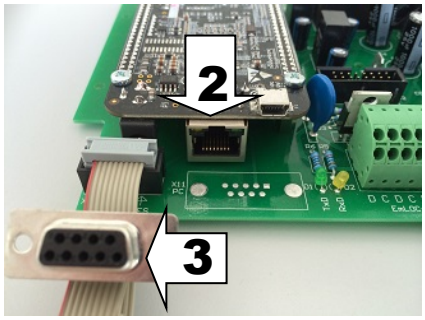




1. PC/printer connection RS232, 9600 baud, 8N1, XON/XOFF.
2. Connection network for web server.
3. PC/printer connection RS232, 9600 baud, 8N1, XON/XOFF.
4. Connection EmLOC data lines (inside).
5. Potential-free signal contact (inside).
6. Mains connection.
7. Numeric keys.
8. Active display for data transmission and alarming.
9. LCD display 2x 40 characters.
10. Function keys
11. Emergency light blocking option (switch, potential-free)



With the web server version, the COM connection is established via a separate cable.

Execution

Wall-mounted housing 180 x 213 x 98 mm (height x width x depth) made of impact-resistant polystyrene with transparent lid. Temperature resistant up to approx. 65 degrees Celsius.
Protection class IP 54, supply voltage 230V/50Hz, power consumption max. 14VA.

Features

The EZ-3 is a central monitoring and control device for up to 999 EmLOC end devices with the following specifications:

- no substation or intermediate station required! All terminal devices are connected directly **in parallel** via a 2-wire bus.
- automatic function test (daily, weekly or monthly).
- manual function test for individual or all end devices.
- automatic operating duration test programmable.
- manual operating duration test for individual or all terminal devices.
- manual status query of individual terminal devices with type recognition.
- 3-digit address coding (001-999 or ALL).
- backlit LCD display with 2 lines of 40 alphanumeric characters.
- Numeric keypad with letter function for data entry.
- Function keys for menu control and manual functions.
- Test times can be set to the minute.
- Printout of status information of all or individual terminal devices, test results, system settings and test books via external printer (option) possible.
- RS232 serial interface for PC and printer connection. Bluetooth optional.
- Converter operation for PC central (visualization) possible.
- EmLOC bus connection 2-wire for parallel connection of all terminal devices.
- potential-free changeover contact for collective fault, function programmable.
- Test book for results storage up to 11 years.
- Configuration of the plant and the EZ also possible with PC software EZ3-Tool.
- individual addresses can be hidden and displayed.
- separate group address configurable for luminaire groups.
- Operating mode (BS/DS) programmable from the control panel.
- Continuous light switchable via control center (depending on terminal devices).
- Operating time of each individual address programmable via control panel.
- 20 Timers for controlling permanent light functions and emergency light blocking. These can address individual addresses, address groups or the complete system.
- Bus watchdog function for troubleshooting.
- Emergency light blocking during unoccupied operating hours.
- Detailed status display of EmLOC devices with all device parameters
- Software update of the EZ via serial interface
- Can be used as EmLOC converter in conjunction with the free visualization software.
- German/English (selectable in system menu)
- Summer / winter time changeover automatic or can be switched off
- Web server option. Parameter setting analog to EZ-Tool.
- Function triggering via potential-free input (NLB input)

Menu structure

The menu navigation allows a clear operation of the EZ. It is carried out via 6 function keys F1 to F6. The lower display line shows the respective function assignment. From the start menu, the F6 key (Menu) takes you to the command menu, and from there to the corresponding submenus.

1 **Start menu: Display of date, time, version and status of the control panel.**

2 **Command menu: Manual communication.**

- 2.1 Information and configuration menu **devices**.
  - 2.1.1 Device information: **Show**
    - 2.1.1.1 Select device address (with numeric or function keys)
    - 2.1.1.2 Select device information (arrow keys)
    - 2.1.1.3 Hide / show device address
  - 2.1.2 Device address: **Operate**.
    - 2.1.2.1 Address selection via numeric keys
    - 2.1.2.2 Function 1 (arrow keys): status, check on and off
    - 2.1.2.3 Function 2: Battery test on/off, data reset
    - 2.1.2.4 Function 3: continuous light on/off and flashing
    - 2.1.2.5 Function 4: Emergency operation on/off (remote switch)
    - 2.1.2.6 Function 5: Permanent light for group on/off
  - 2.1.3 Device address: **Configure**.
    - 2.1.3.1 Show/hide address range
    - 2.1.3.2 Assign address range to a group
    - 2.1.3.3 Assign address range BS/DS
    - 2.1.3.4 Address range Assign emergency operating time
    - 2.1.3.5 Send set configuration to devices
- 2.2 **Test books**
  - 2.2.1 Selection from all exams possible
  - 2.2.2 Selection from only faulty tests possible
  - 2.2.3 Display test results
- 2.3 Printer menu: Only appears if a printer has been selected in "Interface" in the system settings.
  - 2.3.1 Print last test results with errors or all test results
  - 2.3.2 Print complete test book
  - 2.3.3 Print selected test book entry
  - 2.3.4 Print system data
  - 2.3.5 Setting whether and what should be printed after an auto test
- 2.4 System settings:
  - 2.4.1 Setting the addresses used in the system (range)
  - 2.4.2 Variation of the automatic address search (Find/Fastfind). See also page 10
  - 2.4.3 Setting of automatic check (starting from the control panel): auto check off, daily, weekly or monthly
  - 2.4.4 Selection of the test day and setting of the test time
  - 2.4.5 Setting date and time (current)
  - 2.4.6 Re-initialization of the EZ-3. Restore factory settings
  - 2.4.7 Time interval bus watchdog
  - 2.4.8 Address of the error switching module
  - 2.4.9 Timer 01 to 20 Programming
  - 2.4.10 Preselection time Operating duration test (1 / 1.5 / 3 / 8 hours or OFF)
  - 2.4.11 Start date and time Operating duration test
  - 2.4.12 Configure interface (PC or printer and baud rate)
  - 2.4.13 Printer selection
  - 2.4.14 Switch summertime/wintertime changeover on/off
  - 2.4.15 Time interval Permanent status (ring status)

2.4.16 Set IP address (web server operation only)
2.4.17 Configuration signal relay
2.4.18 Configuration NLB input
2.4.19 Select system language

The menus and operation in detail

1. Status menu: Display of date, time, version and status of the control panel.

In the main menu 1 the important system data can be seen without operation. Date and time can be seen with the software version number in the first line, while the bottom line gives the current working status of the EZ-3. The menu key (F6) can be used to switch to the other menu items.

2. Command menu: Manual communication.

From this menu all manually executable functions are enabled.
Four main areas can be selected:

- **Device**: Includes configuration, display and operation of all connected and found address units.
- **PBook:** Contains all test results and the complete test book.
- **Print:** Printer menu for printing test results and system settings.
- **Syst:** All system settings are made here.

2.1 Device list, operation and configuration [F3].

This menu is about all connected and found address modules. In the selection menu "Show" all found devices are displayed with the corresponding configuration and the assigned location text. The address selection is done via direct input with the numeric keys or via the Adr+/- function keys. Here the addresses with I/O can be shown or hidden. Otherwise, this is purely an information menu.
Operating functions are available in the menu of the same name. Here, the status query of the address set with the numeric keys takes place in the first submenu. A short test can also be triggered or stopped here. In the next submenu, the manual operating duration can be triggered or stopped. The data reset function deletes the error messages at the address and resets running processes.
The next submenu offers the possibility of continuous light configuration. The functions are DL on, DL off and DL flashing. The flashing function is often used for luminaire identification. In the next submenu the "remote switch function" is realized. Here a running emergency operation can be switched on or off.
The next submenu offers the possibility to switch on/off the permanent light of whole groups of lights.
In the configuration area, selectable address ranges can be shown or hidden, a group address can be assigned, switched to BS or DS mode, the emergency operating time can be set and all this configuration data can be transmitted to the connected address modules.

2.2 Test book area [F4]

The test book shows all entries by test date. For selection, all test book entries can be selected with F2 and F3 or only those with errors with F4 and F5. The date and time of the test as well as the type of test are displayed in the upper display line. With F6 the selected test result can now be displayed.

2.3 Printer menu

The test results and the test logbook can be printed out here in the same way as in the display. The choice between a complete printout of the test results or only the error messages is the same as in the display menu.
With <F6> the printout of the test book takes place in the order of actuality with date, time and test result of the individual addresses. If only individual test book entries are to be printed, select the next menu.
With the <F3> key, the next submenu is reached, in which a printout of a selected test book entry can be made. The printing of the system data (settings) is done in the next submenu <F3>. The setting whether to print after each automatic test and what to print is adjustable in the next menu accessible by <F3>.

2.4 System settings

All system settings are made here. When setting the system addresses, test result deletion and reinitialization, please note that the detailed test results may be lost. The logbook entries are not affected.

The <F1> key always takes you to the previous main menu.

2.4.1 The address range is set here (first and last address in the system). Checks are performed in this address range. Hidden addresses are not taken into account.
2.4.2 When automatically searching for connected devices, you can choose here between the Status command (standard) or the Find command (fast). The Find command is usually sufficient. Only some older EmLOC devices do not know this command. With <F4> the type of the search routine is selected. The automatic search deletes all entered devices and starts a complete system search. The variant "New search" searches only for missing addresses and keeps already found addresses. With Start the search is started.
2.4.3 For the automatic check, daily, weekly, monthly or no check can be selected.
2.4.4 The test day and time are set in this menu.
2.4.5 Setting for the system time and date.
2.4.6 Press F6 to reset to factory settings.
2.4.7 Here the bus watchdog time can be set in seconds. This function switches the error LED of the connected addresses to flash green (2x). The function can be used to determine a bus interruption.
2.4.8 The address of a central error switching module can be set here using the numeric keypad. If a fault occurs in the system, this address is then switched (remote display).
2.4.9 The 20 timers are programmed in this menu. The timer is selected via the numeric keypad. The setting can now be made with F6. The function, trigger

time and receiver addresses can now be configured in the corresponding submenus.

2.4.10 The operating duration test is programmed here. We recommend that you do not trigger this automatically, but deliberately by hand. Selectable here is "off" / 1h / 1.5h / 3h / 8h.

2.4.11 In this menu, the trigger date and time of the operating duration test (capacity test) can be set.

2.4.12 Configuration of the communication interface (RS232, DSUB 9). Possible are PC or printer, each with 9600 baud or 115200 baud.

2.4.13 Printer type selection. The WSP-3240 is a small battery-powered service printer that receives CR/LF separately.

2.4.14 Selection menu for automatic summer/winter time changeover.

2.4.15 Ring status time. This is the interval time during the continuous polling of the addresses with immediate error message.

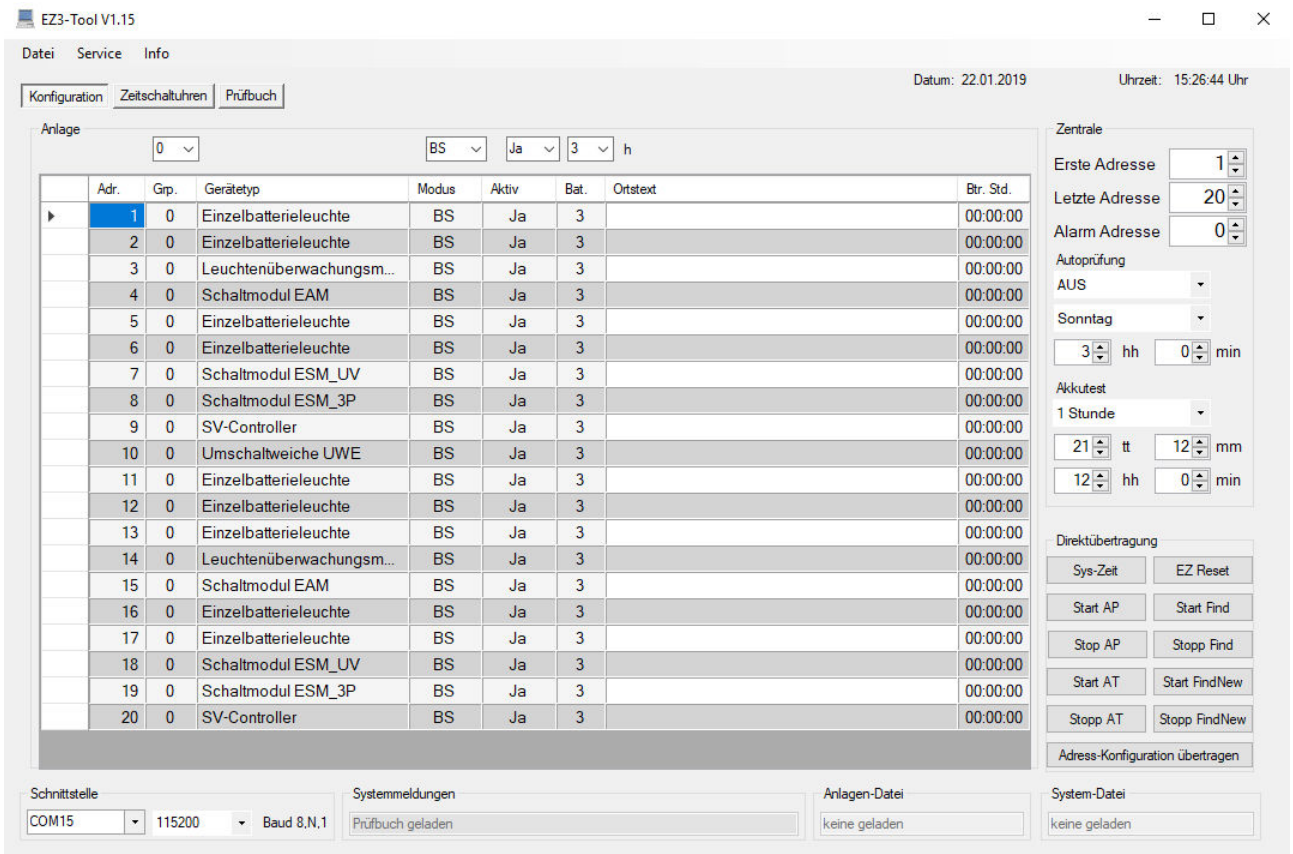
2.4.16 Setting the IP address for web server operation.

2.4.17 Configuration of the signaling contact.

2.4.18 Configuration of the NLB input

2.4.19 Selection of the operator language. German and English possible.

The free EZ3-Tool 2019 program enables convenient configuration of the EZ. All settings can be made here and transferred to the EZ via the interface. Download via www.krk.de



Function of the automatic test

If all the conditions necessary for triggering the automatic test are present, the following sequence is initiated:

1. The EZ-3 sends the <CHECK> command with the address <ALL> three times at intervals of one second. In this way, even "lost addresses" are safely addressed. The status is indicated in the display by the status "Automatic test running". At the same time, all connected devices are instructed to switch off their own automatic test function in order to avoid duplicate tests.

2. After 40 seconds (test time expired), a status message is requested from each address in the system. If no message is received, a request is made up to three times, after which a communication error is registered. This status is indicated in the display by the status "Status request" with the display of the address addressed at the moment. Transmit and receive cycles are signaled by the LEDs TxD (transmit) and RxD (receive).

3. If an error occurs during the status check, this is briefly indicated by the red "Alarm" LED. If an error has occurred during the complete test, the red LED is switched on permanently at the end of the test cycle and the relay contact "Alarm" is activated. The contact can be switched back (acknowledged) by pressing any key. The LED remains on until the next fault-free test.

Potential-free input "NLB

Previously only the input for switching on the emergency light blocking, another function can now also be configured via the system menu. The following are available for selection:

- Emergency light blocking off/on for all devices or only one group address
- Theater light on/off for all devices or only one group address
- Permanent light on/off for all devices or only one group address

Converter mode" option

A PC with the "PC Central" software can be connected via the DSUB socket. After the connection is established, the EZ3 switches to converter mode and acts only as a bus driver. The EZ3 itself now no longer performs any function. The complete control is done via the PC Central.

EZ-3 logbook

The integrated logbook has a variable capacity depending on the number of connected devices (system addresses). The number is allowed to change in the course of operation. The changes are registered automatically, the old entries are retained. The memory capacity must be determined on the basis of the connected devices.

$$\text{Formula:} \quad \frac{6750}{((\text{number of devices: } 8) + 10) * 52} \text{ [years]}$$

Examples:

10 addresses	: 11	Years storage capacity with weekly check
50 addresses	: 7.6	Years storage capacity with weekly check
100 addresses	: 5.6	Years storage capacity with weekly check
250 addresses	: 4	Years storage capacity with weekly check
440 addresses	**: 2**	**Years storage capacity with weekly check**
999 addresses	: 1	Year storage capacity with weekly check

If the memory capacity is exhausted, the oldest entry is deleted in each case to make room for the current entry. This means that the entries are always retained for the maximum period. A complete deletion of the test logbook is only possible by service personnel. The entries in the test logbook are also retained during system initialization to factory settings.

```
----------------------------
| Auto-Pruefung     EZ V2.9 |
|--------------------------|
| 01.01.2019       14:09:00 |
|--------------------------|
| Adr. 001 bis 020          |
|--------------------------|
| Adr.  |     Einer         |
|-------|                   |       Expression example
| Zehner|0 1 2 3 4 5 6 7 8 9|
|       |-------------------|
|  00   |-|o|o|o|o|o|o|o|o|
|  01   |o|o|o|o|o|o|o|o|o|
|  02   |o|-|-|-|-|-|-|-|-|
|       |-------------------|
| - = nv, o = ok, F = Fehler|
----------------------------
```

For correct display on the screen, a terminal font (Consolas) must be selected, otherwise the graphic characters will not be displayed correctly. The same applies to printers.

Special functions

For commissioning a plant and for troubleshooting, helpful functions can be called up via special operation, which are not required for normal operation. In order to remain clear, these functions are not documented in the individual menus.

Trigger auto check: Pressing the "A", "P" and "F2" keys (one after the other!) in the main menu immediately triggers an autocheck. The prerequisite is that the auto test is activated in the system menu. This function means that it is not necessary to change the test time when testing the system manually.

Trigger operating duration test: Like auto test, but with "B", "T" and "F2".

Trigger a reset. If for some unknown reason the EZ-3 is disturbed somewhere in the program sequence, a system restart can be triggered with the key sequence "R", "S" and "F2" in the main menu.

Switching the display light on / off: With the key sequence "L", "E" and "F2" in the main menu, the display light is switched on permanently and longer observation of the display in the dark is possible. If the illumination is no longer necessary, it should be switched off again with the key sequence "L", "A" and "F2" to keep heating to a minimum. In normal operation, the illumination switches on for approx. 1 minute each time the key is pressed.

Autoscan in the test book: This function is triggered with "A", "S" and "F2" in the menu item Test status / Book and causes an automatic "scan" of the test book entry. It is then not necessary to select the next addresses manually. Stopping the scan is done by the same combination.

Display first or last address in the test book: To jump to the beginning or end of the test book entry, these command sequences can be used. The beginning of the entry can be reached with "E", "A" and "F2", the end with "L", "A" and "F2".

Switch emergency light blocking on or off: With "N", "B" and "F2" an intermittent block signal is sent out, which prevents emergency light switching at the connected lights similar to the remote switch system. If the signal is missing due to switching off or bus cable break, the regular switching is activated automatically.

Automatic address search: With "A", "F" and "F2" the Autofind is started within the address range set in the system menu. Addresses that are not found are hidden. With "R", "A" and "F2", hidden addresses are searched again.

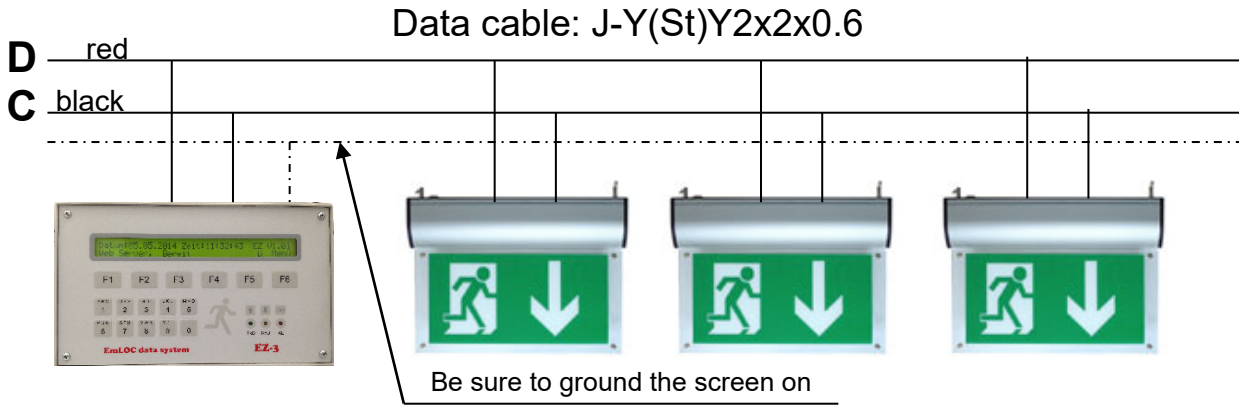
Transfer configuration of emergency operating time: With "B", "Z" and "F2" the configuration stored in the EZ-3 is sent to the devices.

Transfer configuration of group assignment: With "G", "Z" and "F2" the configuration stored in the EZ-3 is sent to the devices.

Transfer configuration of the operating modes: With "M", "Z" and "F2" the configuration (BS/DS) stored in the EZ-3 is sent to the devices.

The commissioning of an EmLOC system

In most cases, commissioning of the installed system is trouble-free if the data line is connected correctly (with correct polarity) and the EmLOC devices are addressed correctly. After connecting the power supplies, all that is required is to select the address range of the connected devices in the "System configuration" menu and to make the desired settings for automatic testing. Done. Go back to the main menu by pressing "F1" 2x and trigger an auto test cycle by pressing the key sequence "A" , "P" and "F2". All connected devices are now switched to "Test". After approx. 40 seconds, the corresponding status is queried from the individual addresses and the system can be evaluated.



Connection of a PC central unit

When the PC central unit is connected (via COM server or similar), the EZ3 can be used as a converter. The functions of the EZ3 are dormant until disconnected from the PC central station.

Configure EZ-3

The configuration is done in the system menu or via EZ3-Tool 2019. The connection is made via PC interface (115200 baud). When equipped with the web server option, configuration can be performed to the same extent via network.

Troubleshooting

Usually, these are not actually "errors" but interpretation problems that lead to queries or deficiency reports. The most common cases are these:

- ***No communication possible***: If there is no communication at all, measure the voltage at the data line terminal. A DC voltage of +14 to +16 volts (C= GND) should be measured between C and D at the EZ-3. Disconnect the data line if necessary. If the value is below +10 volts, check the connected devices for polarity reversal or short circuit of the data line. If the supply voltage at the EZ-3 is OK, there may be an error due to line breakage (measure data voltage at EmLOC device) or incorrect addressing (check).

- *A* ***lamp error*** is reported ***although the lamp function*** is ***OK***: In the case of EmLOC devices with sensor inputs (ESM), these may not be connected or may be defective.

- ***A lamp error is signaled***: The lamp switches off shortly after switching over. In most cases, the battery capacity of the lights is at the bottom (battery empty) or the battery is not connected or is connected with the wrong polarity. When the lights are delivered, the battery is generally disconnected and must be reconnected by the customer. After commissioning, the lights / devices require at least 24 hours charging time before checks or tests are carried out.

- Connected ***devices switch to test independently*** without a control panel connected: All EmLOC devices have their own automatic weekly test cycle that allows self-diagnosis when no central station is present. This is activated during commissioning. A connected EmLOC central unit automatically switches off this internal test cycle for all devices after the first auto-test.

The following installation procedure has proven successful:

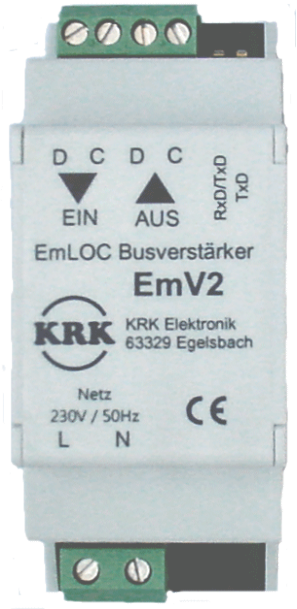
- First install the control panel and put it into operation.
- Install smaller luminaire sections (floor by floor) and immediately check them manually (each address separately) with the control panel (query status).
- Provide separation possibilities in the data bus (floor separator, building separator).
- For very long data line distances, use EmLOC amplifiers (repeaters).

EmLOC data repeater (amplifier)

In unfavorable cases, interference can occur during data transmission if the connection paths are very long and the termination load is high. In this case, the voltage drop on the connecting cable is greater than on the connected devices (the impedance of the terminal devices is 1 kOhm). This is sometimes the case with new installations in existing buildings (old buildings), where optimal cable routing is no longer possible for planning reasons.

In such cases, a larger cable cross-section or the use of data amplifiers at the intersections is recommended. One data amplifier drives up to 100 EmLOC devices. Additional amplifiers can be connected to the output branch of the amplifier if required, so that almost any distance can be overcome.

When using one EmLOC device, up to 2 kilometer of cable can be laid without an amplifier. If several devices are used, the possible cable length is reduced accordingly.



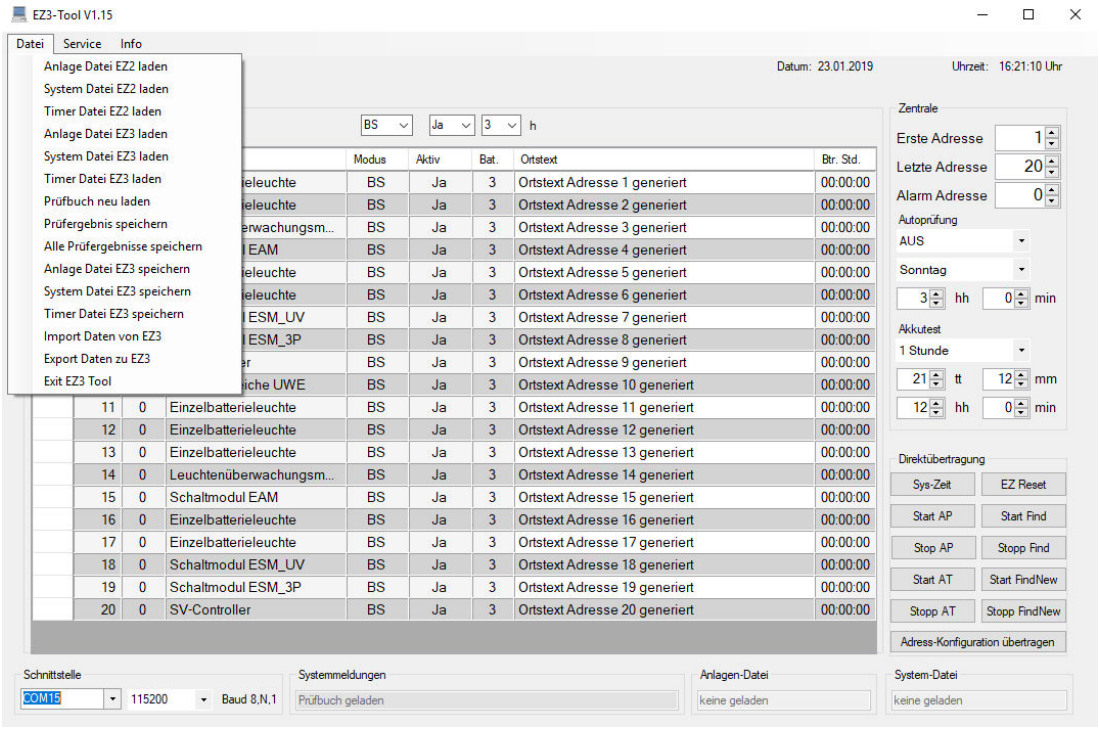
The EmV2 drives up to 100 terminal devices and provides galvanic isolation of luminaire groups. During installation, it is essential to ensure that the EmLOC bus of the EmV2 has no contact with other buses.
The bus line coming from the control panel is connected to the "ON" terminal, the "OFF" terminal to the devices to be supplied. Two LEDs indicate the data communication. The shield of the outgoing cable must also be grounded.

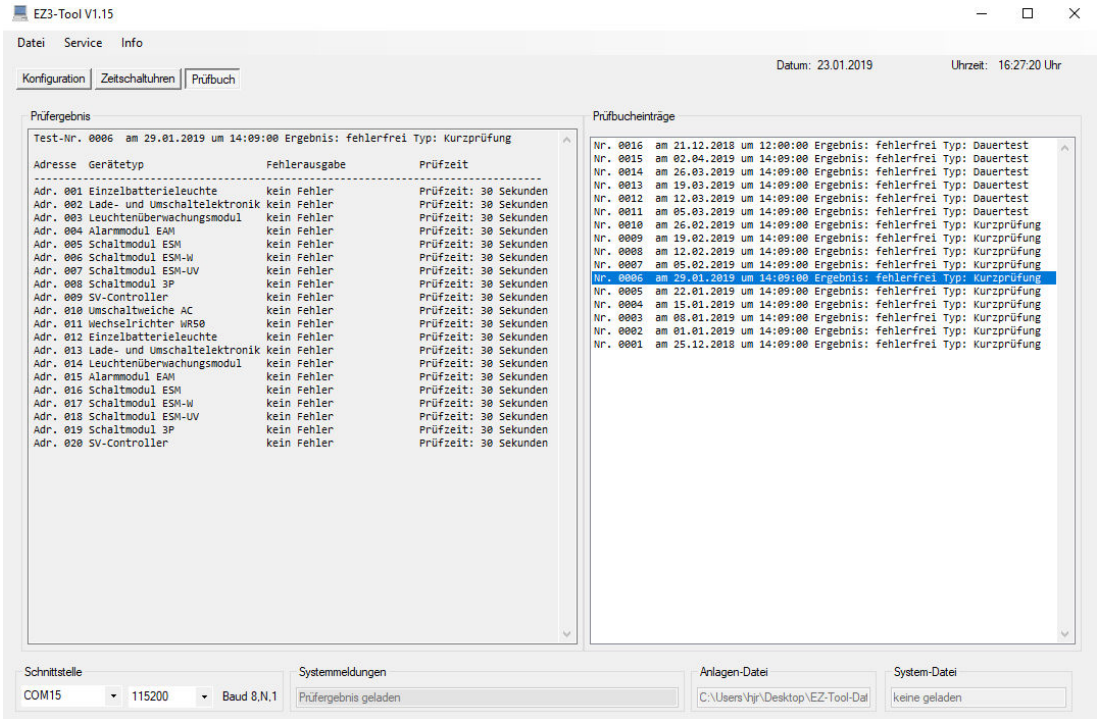
When designing the system, corresponding sections should be connected to the control panel separately. The division according to floors has also proven to be useful for possible troubleshooting. The installation of accessible disconnection points of the individual sections is recommended.

Get planning support from your supplier!

Software "EZ3 Tool

The EZ3 configuration software for Windows systems is available for download free of charge from the KRK Elektronik GmbH website (www.krk.de).

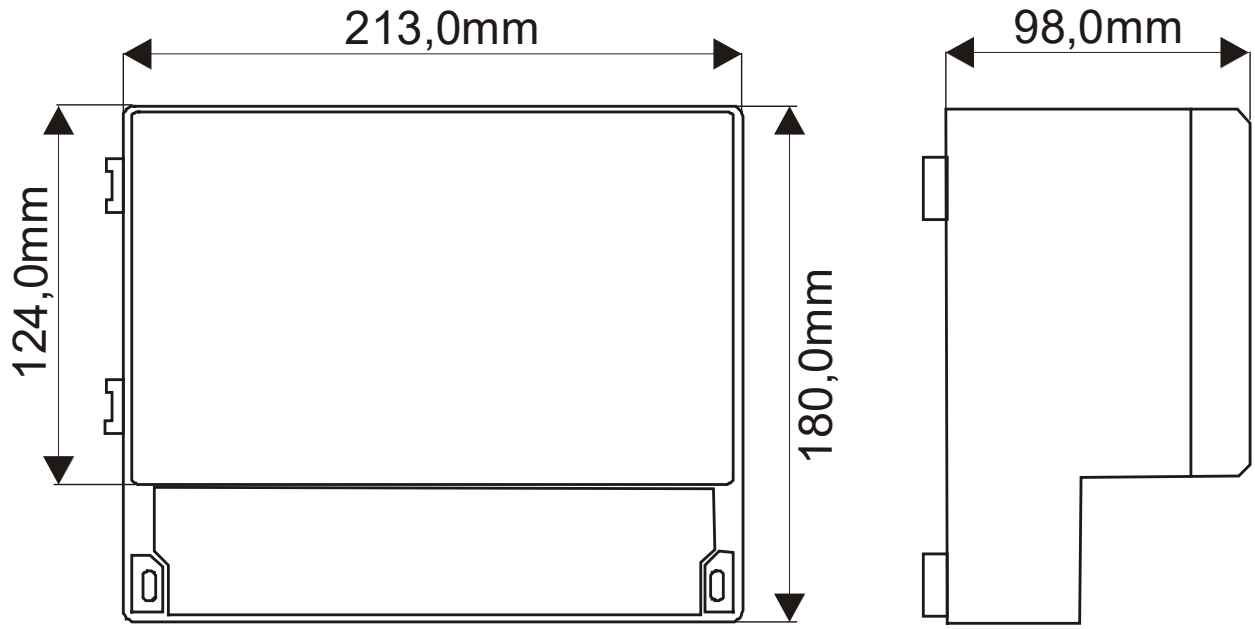




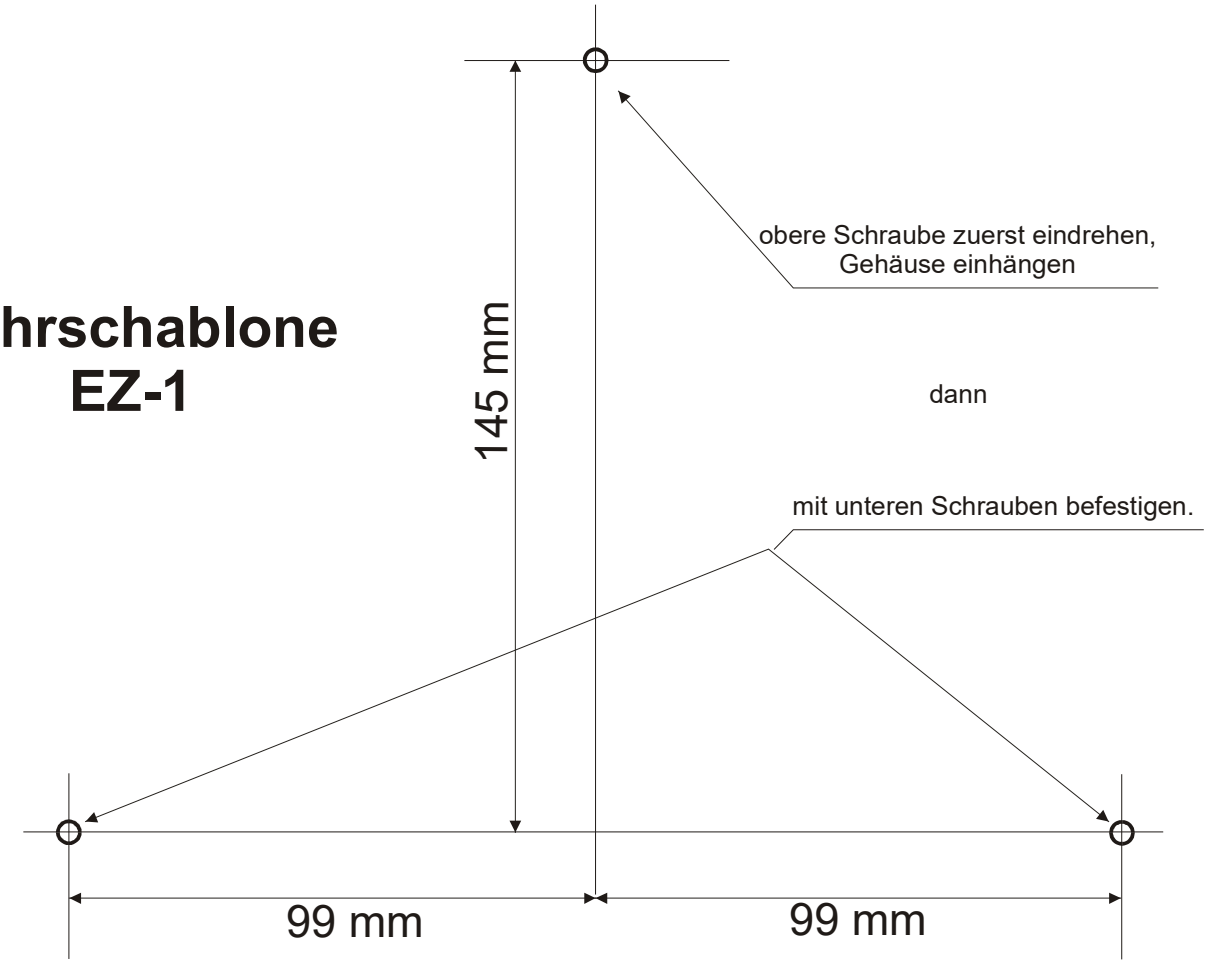
Web server option

The web server option contains its own documentation.

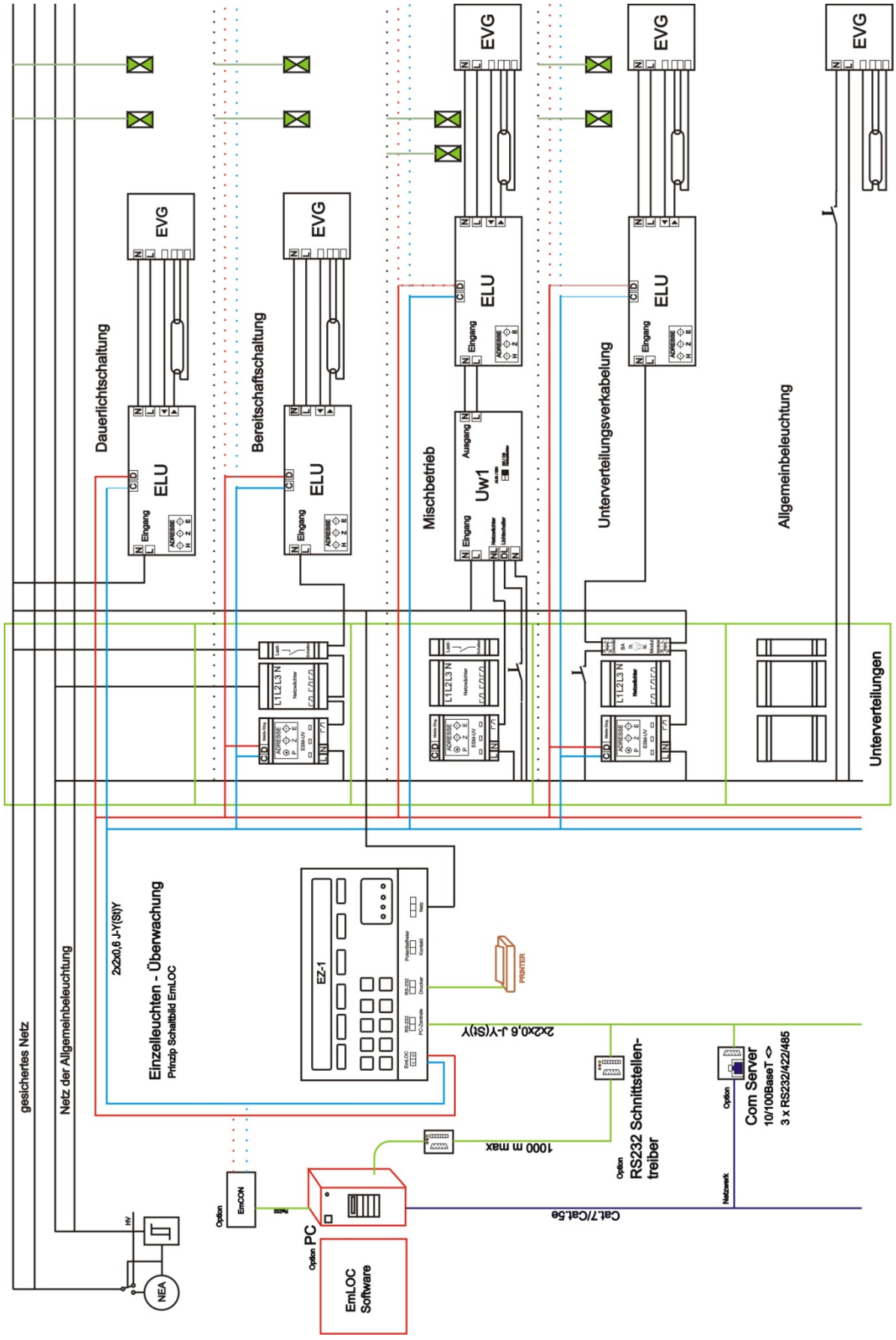
Housing dimensions EZ-3



Bohrschablone EZ-1



Installation overview:



Maintenance book

Date	Name	Comment

Project:

Commissioning:

Service number/name:

Quick commissioning

Read in devices:

- Press menu (F6)
- Syst. (F6) press
- Enter address range. (F4, then enter first address with numeric keys, F5, then enter last address with numeric keys).
- Arrow down (F3). Select fast search with F5.
- Press END (F1) 2x. Main menu.
- Press keys "A", "F" and "F2" in succession (trigger Autofind)
- Wait until last address has been queried
- DONE.

Control of the devices found:

- Press "Menu" (F6)
- Press "Device" (F3)
- Press "Show" (F2)
- Check addresses with "Adr+" (F3). If all addresses are occupied, the module designations are entered. If an address was not found, it says "*** hidden***".

Then set the parameters for the autocheck in the Syst menu.

For single battery systems select "weekly test", for central battery systems select "daily test".

For more special settings use the tool software (free on our website.