fluvo®
innovative schwimmbadtechnik

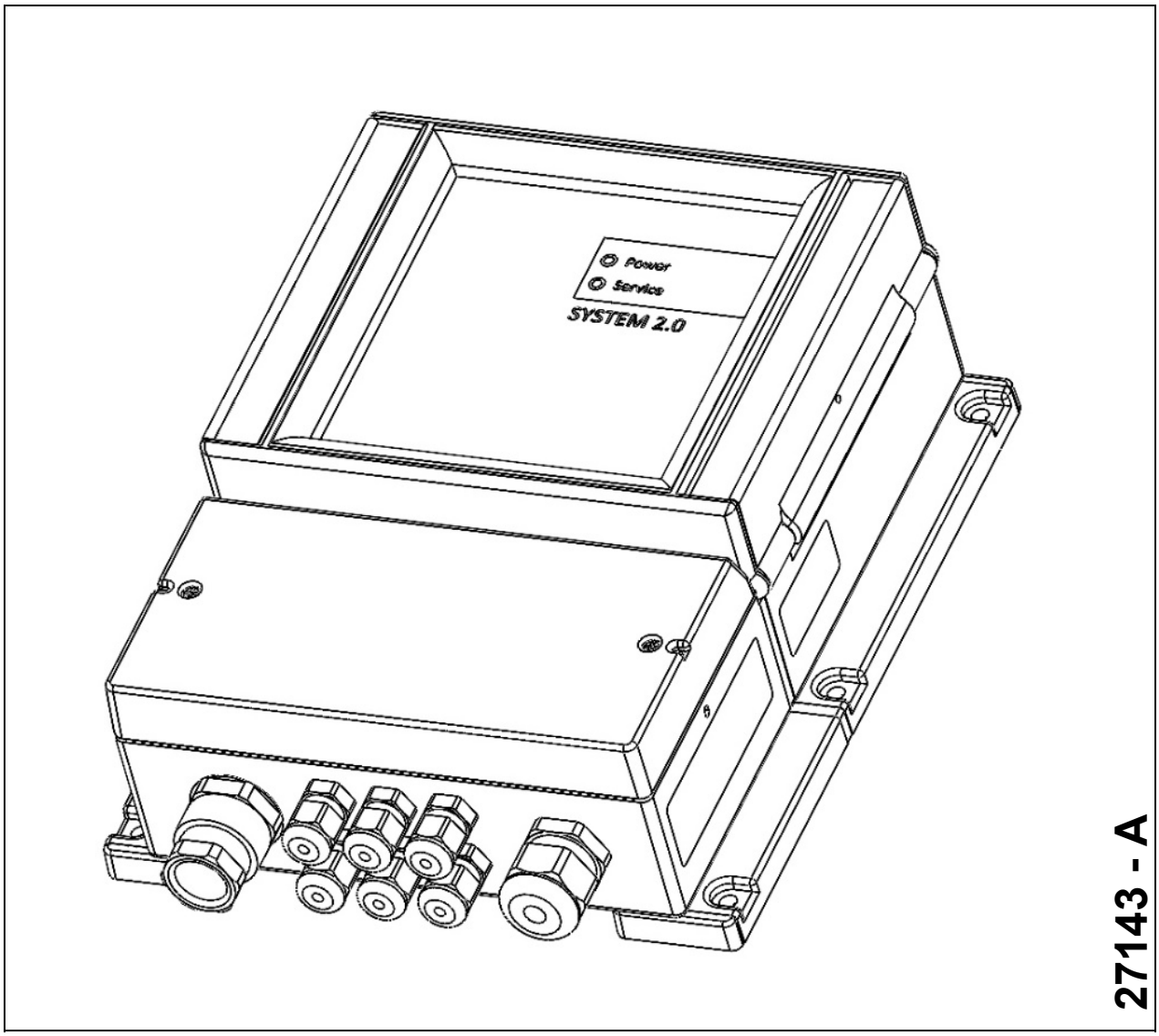
schmalenberger
strömungstechnologie

Gateway

GB

Operator's manual

Translation of the original



Electronic devices are not regular household waste. In accordance with Directive 2002/96/EC of the European Parliament and Council of January 27, 2003 regarding electrical and old electronic devices, they must be disposed of properly. Please drop these devices off at public collection points provided for that purpose when you have finished using them.

Table of Contents

Subject to technical changes

1 Introduction

The gateway is a stand-alone device that allows you to control various Fluvo attractions via the “myfluvo®” app. It serves as an interface between the “myfluvo®” app, the network and the attractions.

1.1 Proper use

The system may only be operated via the “myfluvo®” app within the field of vision of the pool.

Any other use and operation is improper use. Any resulting damage is excluded from liability.

2 Functional features

- Ethernet interface via RJ45 plug
- IP parameters adjustable via web interface
- 24V DC voltage source for connection of 2x converter box
- RS485 interface for DMX output Colour light control
- Modbus RTU – interface
- Fluvo – BUS for networking Fluvo components
- Device card

3 Safety instruction

Danger of lethal electrical current!
Electrical connections must only be made by a professional electrician in accordance with VDE Regulation 0100. Observe the local requirements of the responsible electrical power provider as well as standards and safety requirements for electrical systems in swimming pools.

In case of damage caused by failure to observe the information provided in these operator's manual, all claims under warranty shall be void. The manufacturer cannot accept any liability for resulting consequential damages.

- The device must only be used when it is in flawless technical condition.
- Eliminate malfunctions without delay.
- Check the device and the electrical power line at regular intervals for damage.
- The L/N/PE connection of the power supply voltage must be made in accordance with VDE 0100 and VDE 0160.
- A protective and isolating device must be provided for turning off the power supply.
- **Before beginning installation and service work, the power supply connection must be switched off and secured against being switched on again.**
- The device does not contain any components that require servicing by the user.
- The housing cover may only be opened by the manufacturer. (guarantee seal)
- In the event of a malfunction we recommend contacting the supplier.

Attention:

- Failure to observe the safety instructions, for example touching live parts while the device is open or handling the device in an improper manner is hazardous with potentially fatal consequences.
- If the guarantee seal is destroyed, the guarantee and manufacturer's warranty shall be rendered null and void

Definition of abbreviations used

FU - Frequency inverter (German Frequenzumrichter), drive controller, speed-controlled pump
GSA - Counter-current system

4 Technical data

4.1 Terminal connections and adjusters

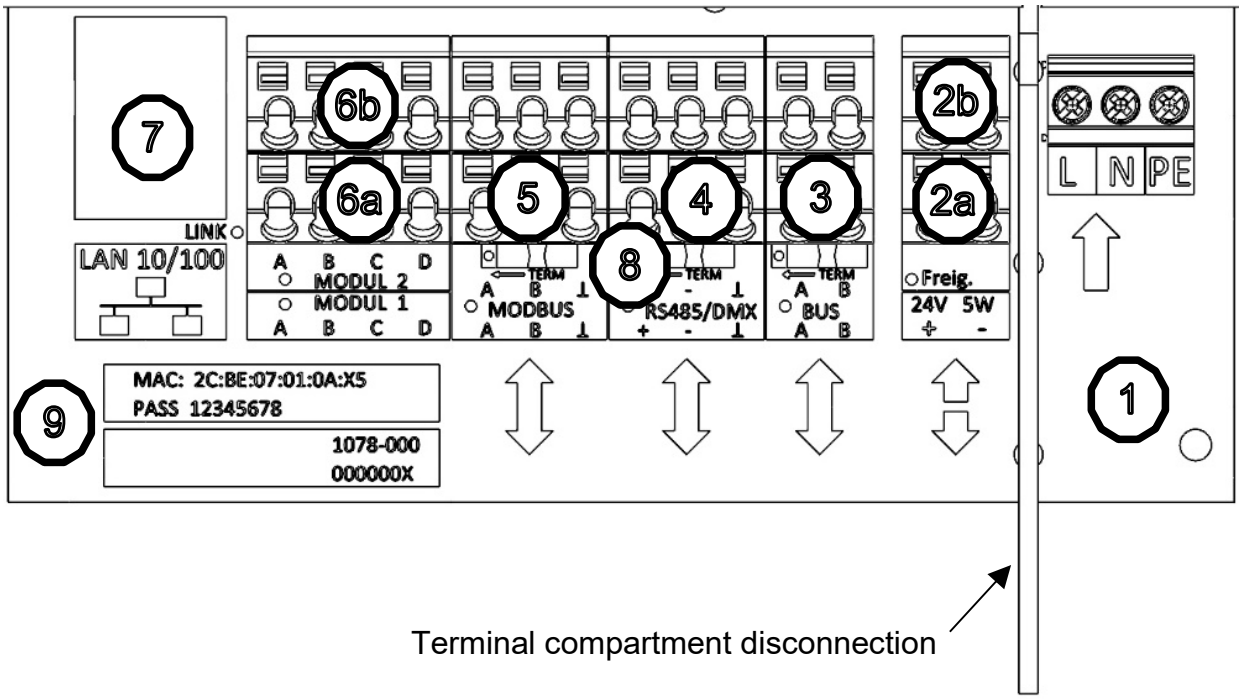


Figure 1

Terminal compartment disconnection

Safety instruction:
The terminal compartment disconnection is a safety device for protecting loose connection cables against the mains voltage.

The terminal chamber disconnects are inserted and can be removed for easier wiring as follows:

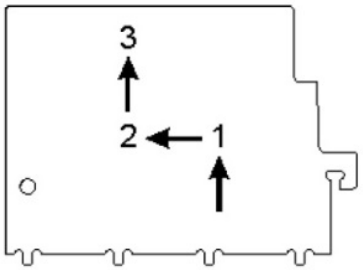


Figure 2 Terminal compartment disconnection

Installation is in the opposite order.

4.2 Description of terminal connections

1	**Mains input** The L/N/PE connection of the power supply voltage must be made in accordance with VDE 0100 and VDE 0160. A protective and isolating device must be provided for turning off the power supply. Terminal “PE” must be connected to a protective ground. Screw terminal cross-section 0.2 to 2.5 mm²
2a	**24V DC voltage source 10W** for connecting 3x converter
2b	**Enable** When the enable contact is open, the control functions of the devices (Control NT, frequency inverter, converter box) that are connected to the gateway via a bus connection are set to inactive. A potential-free latching switching contact **must** be used for closing. In the delivery state, this is closed via a wire jumper.
3	**BUS** Interface for operating Fluvo devices via Fluvo BUS with communication LED. The connection is protected against polarity reversal.
4	**RS485 / DMX** Master – DMX signal output with communication LED Ensure correct polarity. + line A / - line B / ⊥ shield
5	**MODBUS** Master – FU signal connection with communication LED Ensure correct polarity. Line A / line B / ⊥ shield
6a	**MODULE 1 (expansion module optional)** Terminals with communication LED. Type-dependent assignment
6b	**MODULE 2 (expansion module optional)** Terminals with communication LED. Type-dependent assignment
7	**LAN connection** RJ45 socket with communication LED
8	**Terminating resistors for bus systems** Slide switch active/inactive Delivery state A → inactive / B → active
9	**Device-specific data** MAC address Password for “myfluvo®” app, can be changed, see 8.2 Serial number

4.3 Device dimensions

Dimensions in mm

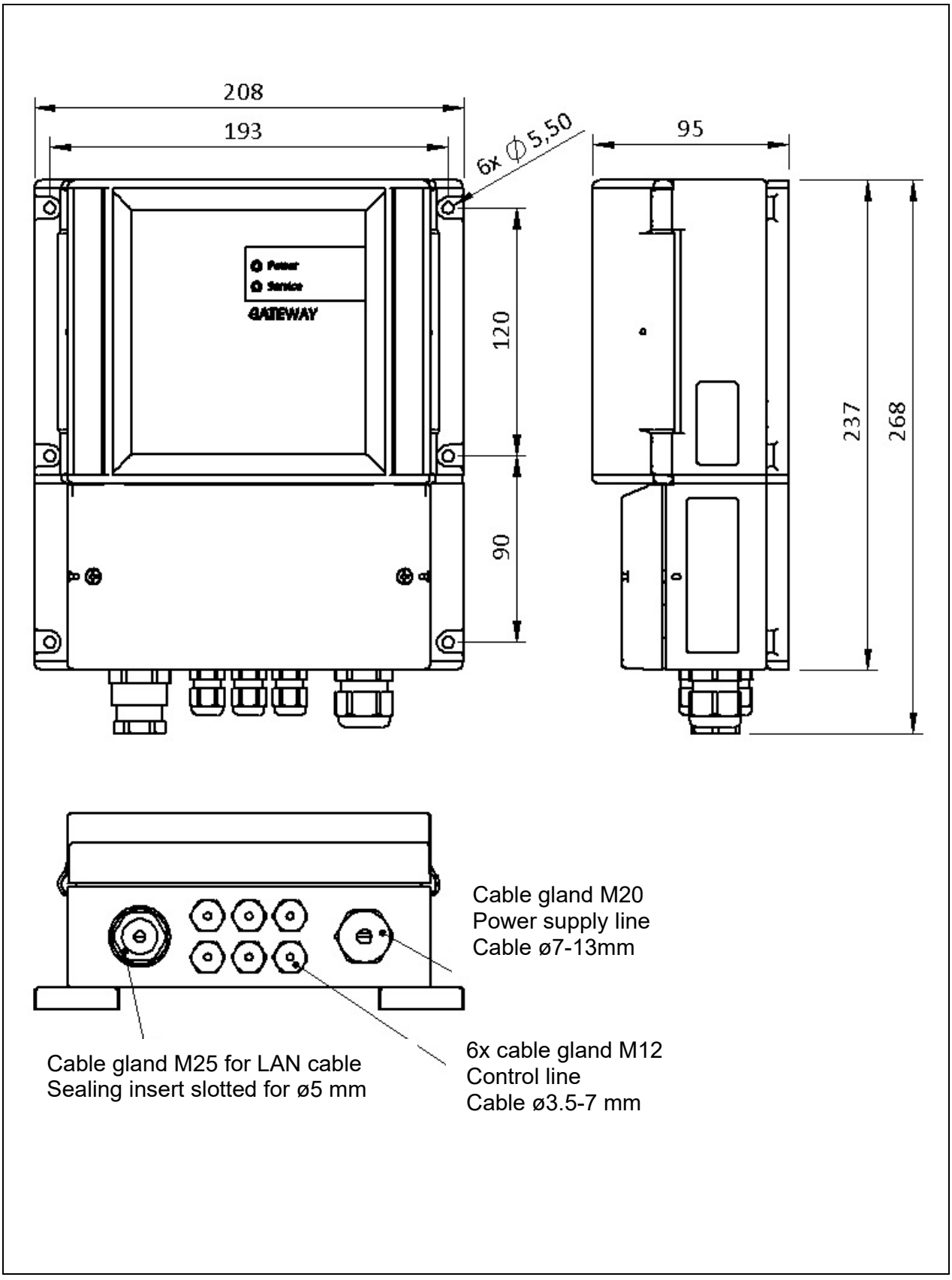


Figure 3

4.4 Technical specification

Dimensions max. W x H x D (in mm) Weight	205 x 130 x 270 approx. 3.2 kg
Mains input (L, N, PE) Input voltage range U_N Nominal input current I_N	 100-240V AC 50/60Hz 1~ 0.6 A for 230V AC 50Hz
Voltage source (0V, 24V) Nominal voltage U_{out} Output current $I_{out\ max.}$	 24V DC 400 mA 10 W SELV
EMC	EN55011 EN61000-6-1
Ambient temperature Operation Storage	 -30°C to +50°C -40°C to 70°C
Degree of protection	IP65 Only if unused cable screw connections are sealed with plugs
Mains connection terminals Rigid cable cross-section Flexible cable cross-section **with** ferrule	 0.2 … 2.5 mm² / 24 … 14 AWG
Control contact connection terminals Rigid cable cross-section Flexible cable cross-section **with** ferrule	 0.5 … 1.5 mm² / 20 … 16 AWG 0.5 … 1.0 mm²
Display LED – GREEN LED - RED	Operation Service
LAN – Ethernet 1x RJ45 socket Type Data rate IP parameters	 IEEE 802.3 Up to 100 Mbit/s DHCP active in delivery state Adjustable via web interface: IP address, subnet mask, etc.
MODBUS RTU BUS type Data rate Terminating resistor	 RS 485 9600 baud 120 Ohm
BUS	For connecting FLUVO devices Luchs NT, Control NT, converter box Protected against polarity reversal
DMX	DMX master output according to DIN 56930

Subject to technical changes

5 Operating Display

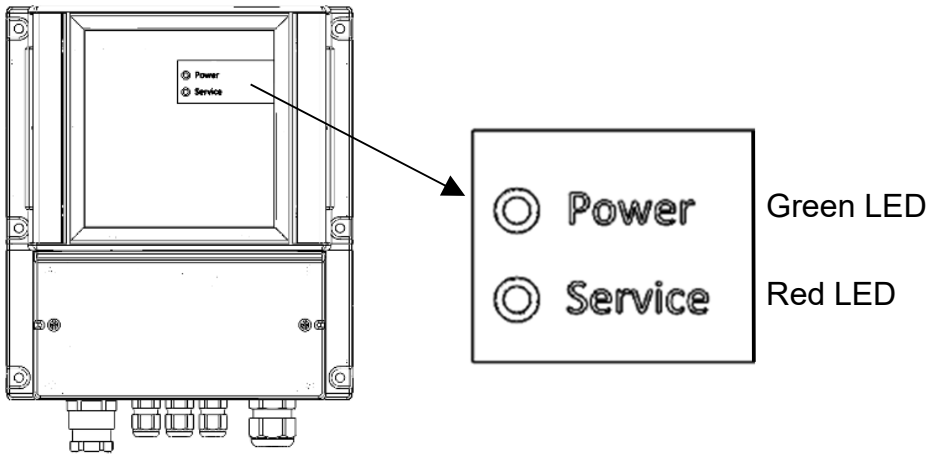


Figure 4

Two LEDs on the front indicate the current device status.

Green	POWER	LED flashes → Enable contact open LED permanently ON → Enable contact closed **Notice:** **Observe the 4.2 enable contact description** Mains power ON: LED flashes 4x per second An initialisation process starts after 5 seconds The green and red LEDs flash alternately, This procedure takes 30 seconds.
Red	SERVICE	Flashing for malfunction

5.1 Fault message

If a fault message is present on a device connected via BUS, this is indicated by the red service LED.

Error	**Flash code**	**Measure**
Collective fault signal	Red LED flashes steadily	Check device with fault message for errors and rectify.

6 Installation

6.1 General information

For installation of FLUVO devices and systems, the respective operator's manual applies.

- 27251 Converter box 3.0
- 27248 Control NT
- 27142 Luchs NT
- 27263 Xanas
- 27131 X-jet

The following section describes the gateway installation and networking options.

6.2 Mechanical installation

The gateway is intended for direct wall mounting. The device has 6xØ5.5mm through-holes for fixed wall mounting, see Device dimensions chapter.

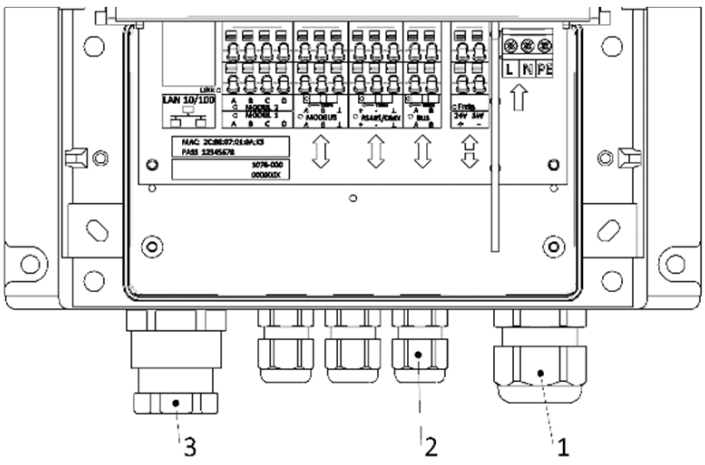


Figure 5

A cable gland [3] with a slotted sealing insert is provided for connecting the LAN cable. Loosen the pressure screw and the sealing insert. Thread the pressure screw and sealing insert over the assembled LAN cable. Guide the assembled RJ45 plug through the opening into the terminal compartment and tighten the pressure screw.

The cable glands [2] for connecting the control and bus lines are sealed with dummy plugs as moisture protection.

To ensure the IP65 device protection class:

Make sure that

a) the cable glands in the housing are firmly tightened
b) the seal for the cable is correct.

6.3 Bus connections

The gateway has three operational bus systems:

- BUS – Networking Fluvo devices with each other
- RS485 – DMX Output – light control
- MODBUS – frequency inverter control connection

6.3.1 Bus terminating resistor

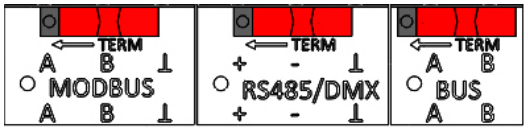
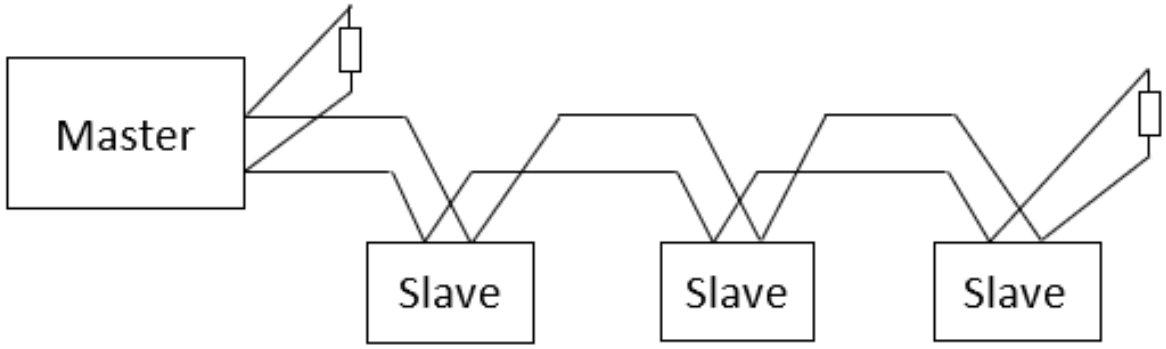


Figure 6

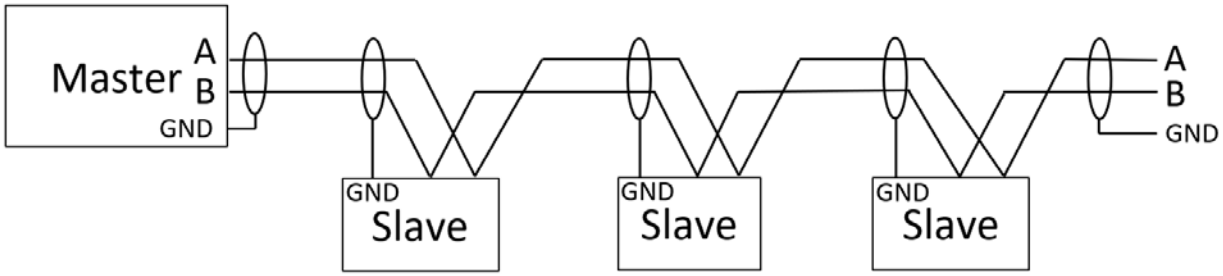
INACTIVE	ACTIVE
TERM	TERM

Each of the three bus connections is provided with a terminating resistor. This can be set via a sliding switch (TERM). For more information on the terminating resistor of the terminal devices, see the corresponding operating instructions. Provide the bus line with a terminating resistor at the beginning and end.



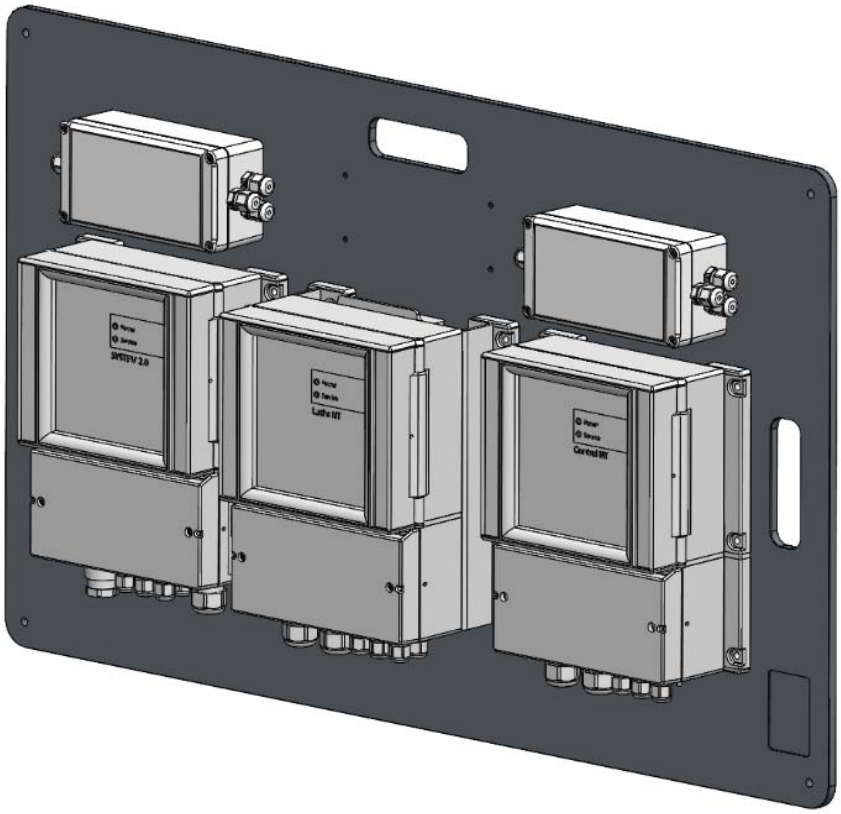
6.3.2 BUS installation note, data cable and wiring

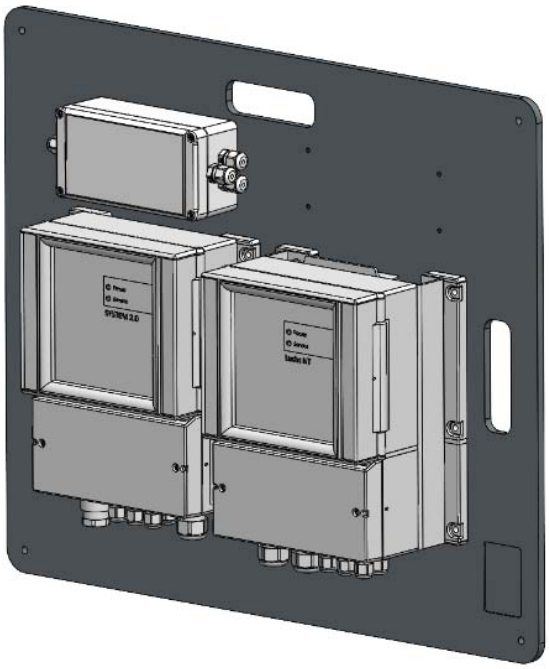
To ensure stable data communication between the bus subscribers, it is recommended to use a low-capacitance shielded data cable for field bus systems. Connect the cable shield to the terminal marked ⊥ / GND on both sides. Line/serial wiring is prescribed as the wiring topology. This means that bus participants are connected in series and the bus line goes directly from bus participant to the next bus participant. Take care to avoid stubs, as these cause interference on the BUS.



In the interest of a stable bus connection, as many bus devices as possible should be installed in the direct vicinity of the gateway. Individual units or even groups of units should only be disconnected from the gateway if this cannot be avoided. Always keep the bus line as short as possible. The maximum cable length is 30 m.

Installation examples (bus participants grouped together):

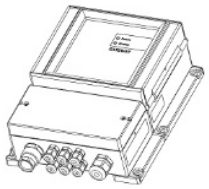


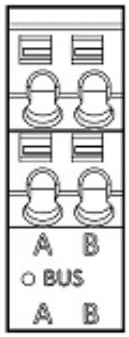


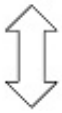
6.4 Overview of network-capable devices via BUS

The gateway as well as the LuchsNT light control unit, Control NT and the converter box have a standard BUS connection. This allows these devices to be connected to each other with protection against polarity reversal. The gateway works as MASTER, the other devices as SLAVE. An individual device address must be set on each SLAVE device.

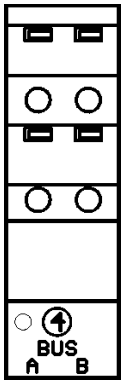
Gateway







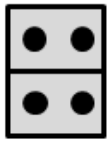
LuchsNT BA 27142

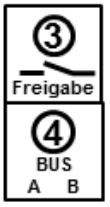


Adjuster Devices AD

Device	Pos
1	0
2	1
3	2
4	3

Control NT BA 27248





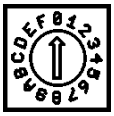
Adjuster Devices AD

Device	Pos 1	Pos 2	Pos 3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF

Converter box BA 27251

+24V	GND
DOUT	DOUT
DOUT	DOUT
BUS	BUS

Adjuster Devices AD



Pos	Assignment
A	FU1
B	FU1
C	FU2
D	FU2
E	FU3
F	FU4

During installation, terminals A are connected to each other and terminals B are connected to each other. The BUS address must be set on the devices. The BUS address may only be assigned once.

Please note that the BUS address is only adopted when the device is restarted. To do this, disconnect the device from the mains and reconnect it.

6.5 GSA with FU in combination with the gateway

The operator's manual applies for the basic installation of the counter-current system 27263 Xanas and 27131 x-jet

The converter box in combination with the gateway

Supply the converter box via the 24V voltage source in the gateway. A maximum of three converter boxes can be connected. Additional converter boxes must then be supplied externally or via the FU using a GND connection. Make sure that there is a GND connection between the converter boxes and the gateway.

The GSA is connected to the gateway via "BUS":

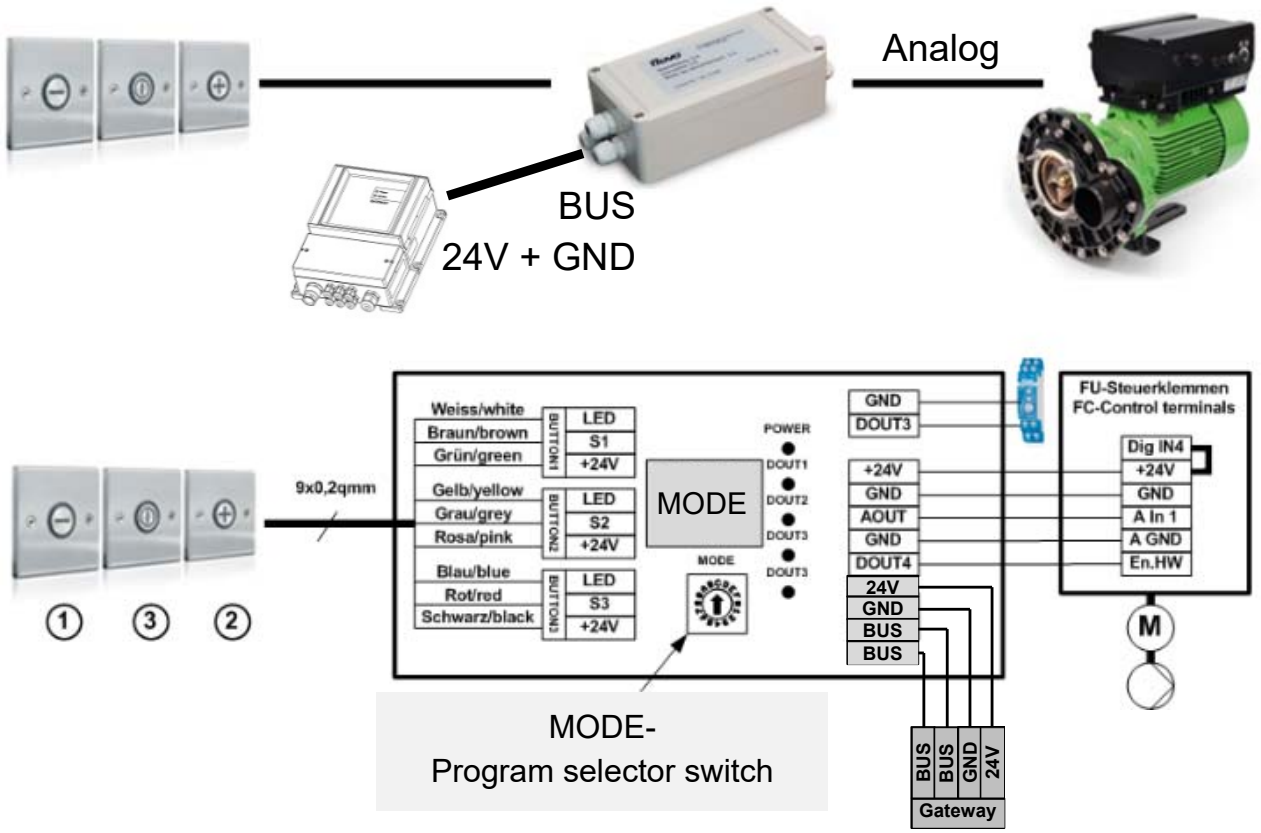


Figure 7

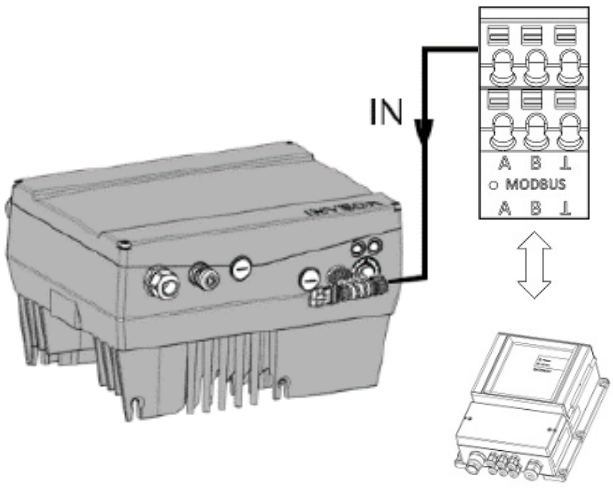
In order for the gateway and converter box to communicate with each other, a device address must be set on the converter box using the MODE programme selector switch.

The gateway works as MASTER and the converter box at address A-F as SLAVE.

Assignment of MODE programme selector switch to FU

MODE	A	B	C	E	E	F
FU	FU1	FU1	FU2	FU2	FU3	FU4

6.6 Controlling the frequency inverter FU via Modbus



M12 socket

PIN no.	Assignment
1	24V
2	RS 485 - A
3	GND
4	RS 485 - B
Housing	Shield

Figure 8

MODBUS RTU - Wiring				
Master Gateway	Slave 1 FU 1 Adr.001	Slave 2 FU 2 Adr.002	Slave 3 FU 3 Adr.003	Slave 4 FU 4 Adr.004
Modbus A/+	RS485 A/+	RS485 A/+	RS485 A/+	RS485 A/+
Modbus B/-	RS485 B/-	RS485 B/-	RS485 B/-	RS485 B/-

Connection cable with M12 connector A-coded, available with 10m length and open cable end.

For pure Modbus operation, the following FU parameters must be set:

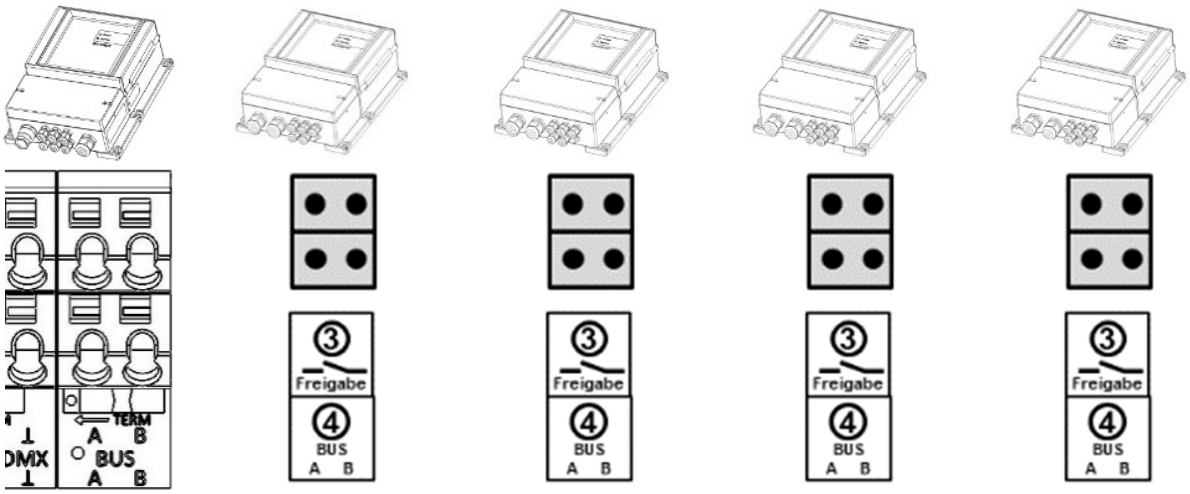
Kostal INVEOR setting parameters		
6.051	SAS / MODBUS baud rate	9600
6.065	MODBUS configuration	4 = 8 bits, even parity, 1 stop bit, 32 bit, big endian
6.050	MODBUS bus address	Values 1 – 4 (factory setting 1)
6.064	RS485 bus type	1: Modbus RTU / SPF
1.130	Setpoint source	4: SAS/MODBUS
1.131	SW enable	9: Autostart

6.7 Attraction with sensor button and Control NT

The Control NT is connected to the gateway via BUS.

Control NT is automatically recognised at the gateway via the bus connection and displayed via the “myfluvo ®” app.

Gateway	**Control NT**	**Control NT**	**Control NT**	**Control NT**
	Device 1	Device 2	Device 3	Device 4
Master	Slave	Slave	Slave	Slave



Wire all BUS A terminals and then all BUS B terminals together. The connection is protected against polarity reversal.

Set the corresponding device BUS ID for each Control NT device. Each BUS ID may only be assigned once. In the delivery state, device 1 is active.

	Pos1	Pos2	Pos3
1	**OFF**	**OFF**	**OFF**
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF

	Pos1	Pos2	Pos3
1	OFF	OFF	OFF
2	**ON**	**OFF**	**OFF**
3	OFF	ON	OFF
4	ON	ON	OFF

	Pos1	Pos2	Pos3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	**OFF**	**ON**	**OFF**
4	ON	ON	OFF

	Pos1	Pos2	Pos3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	**ON**	**ON**	**OFF**

When operating Control NT via BUS on the gateway, all functions are still possible except for the “latching” control function. The “momentarily” function is stored as standard.

Notice: Observe 27248 Control NT operator’s manual

<u>Connection terminals</u>

BUS A

BUS B

⊥ Data cable shield.

Make sure to set the BUS terminating resistor in the gateway.

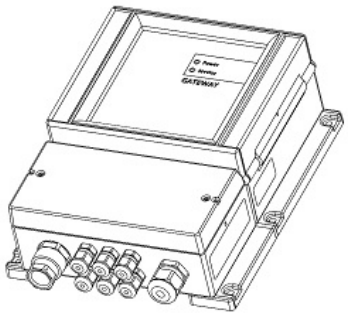
6.8 LuchsNT light control via BUS

The LuchsNT control unit is connected to the gateway via BUS.

LuchsNT is automatically recognised on the gateway via the bus connection and displayed via the “myfluvo ®” app.

All additional information on operation and installation can be found in the 27142 LuchsNT operator’s manual

Gateway



LuchsNT

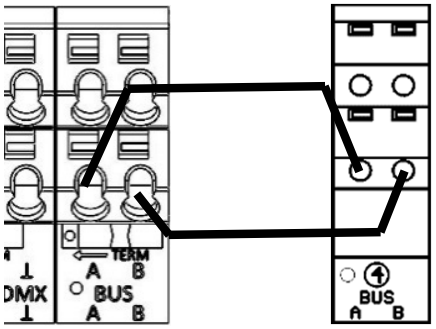
Connection terminals

BUS A

BUS B

⊥ Shield

Data cable



Set BUS address

Device	Program selector switch pos
1	0
2	1
3	2
4	3

Note:

- The connection is protected against polarity reversal
- Max. line length 30 m
- Recommended control line 2 x 0.5 mm²
- Make sure to set the BUS terminating resistor in the gateway.

Notice: Observe 27142 LuchsNT operator’s manual

When operating LuchsNT via BUS on the gateway, only the “momentarily” control function is possible. The following is possible directly on the device:

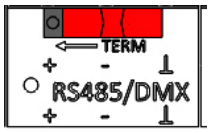
→ ON / OFF function **only** momentarily
→ Change of colour momentarily
→ Button lighting setting 1-colour or RGB

The synchronisation bus is available for the operation of several control units with the same control signal. A device is operated as MASTER to which the control signals are connected. The remaining devices are operated as SLAVE, **for additional information, see 27142 LuchsNT operator’s manual**.

6.9 Light control via DMX

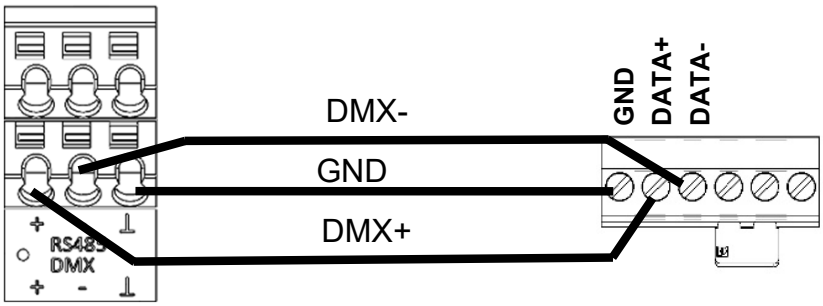
The gateway has a DMX master output according to DIN 56930. The DMX output is inactive when delivered and must be activated via the device's web interface, see operating instructions 27143 Sec. 8.5

DMX is designed as a 3-wire BUS with three connections; DMX+ and DMX- as well as ⊥. Be sure to connect ⊥ to the GND of the external DMX control unit. As a rule, the GND connection is made by placing the cable shield on both sides. For short lines where no shielded line is used, the GND connection must still be made.

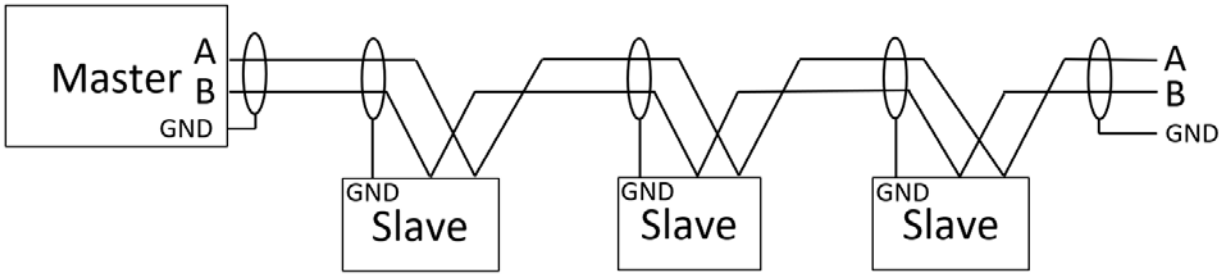


A terminating resistor, which can be activated via a sliding switch, is located at the connection terminal. Transmission activities are indicated by a yellow signal LED in the terminal compartment.

Gateway **Light control unit with DMX input**



When installing, make sure that the polarity is correct.



6.9.1 Channel assignment

Start byte 0x00

Channel 1 – red	Channel 5 – red	... to channel 512
Channel 2 – green	Channel 6 – green	
Channel 3 – blue	Channel 7 – blue	
Channel 4 – white	Channel 8 – white	

7 Start-up

7.1 Procedure

Check the wiring and addressing of each bus subscriber before initial commissioning!

Important information:

The gateway performs an initialisation process every time the device is restarted (network ON). All devices connected to the BUS are scanned and stored in the internal memory. During the initialisation process, all BUS subscribers must be actively connected to the network, only then does the gateway recognise this BUS subscriber.

A total of up to 5 BUS subscribers can be connected, including a maximum of 1x LuchsNT light control.

The gateway is connected to the network, either at the same time as the other devices or as the last of the devices. If the gateway is connected to the mains before the bus subscribers, the initialisation process is completed but these bus subscribers will only be recognised after the gateway has been restarted. Alternative teach-in functions during operation, see chapter 8.2.1.

7.2 Operating Display

When the device is started, the green power LED flashes 4x per second for 5 seconds.

Then an initialisation process starts, during which the green and red LEDs flash alternately for 30 seconds. This analyses which Fluvo devices are actively connected via “BUS”.

The completed initialisation process is indicated by the continuous illumination of the power operation LED. If, after starting the device, the power operation LED continues to steadily light up “ready for operation”, check the enable terminal to see if it is actively closed.

7.3 Devices IP readout via myfluvo® app

1. Download the “myfluvo®” app on your end device.

2. Start the “myfluvo®” app

3. The automatic search function searches the network for an active gateway.

4. If a gateway is found, it is displayed with the current IP address.

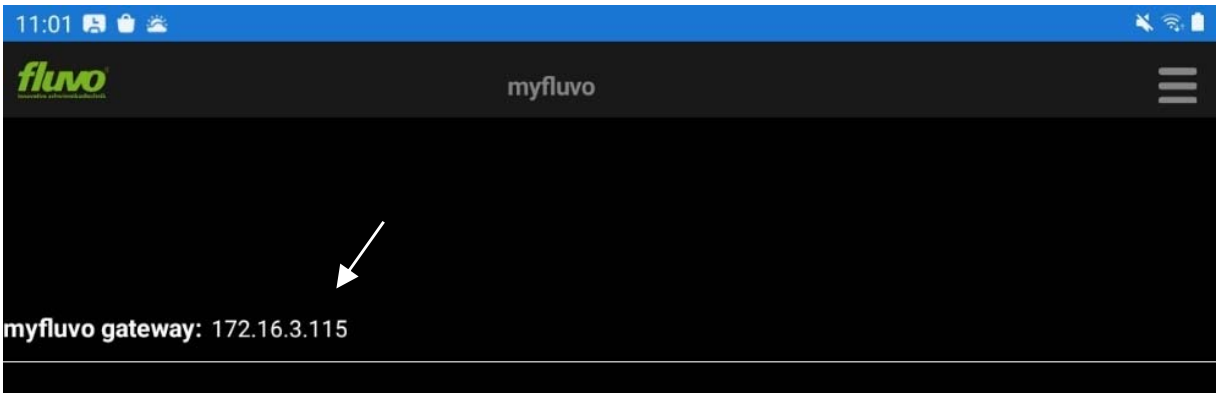
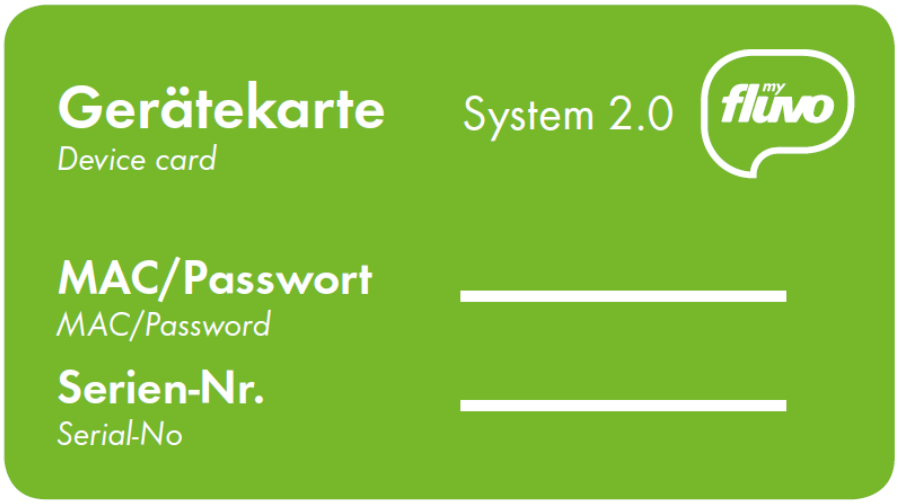


Figure 9

The login password in the delivery state can be found on the device card or in the 4.2 Device-specific data chapter.

7.4 Device card

The device card is located in the terminal compartment when delivered. The MAC address, device password and device serial number are specified on it.



8 Device configuration via web interface

8.1 General information

Device settings can be configured via the web interface.

These include:

Network settings, integrate new bus subscribers, display active bus subscribers, device information and status of the connected bus subscribers.

To access the web interface, you need the IP address that is displayed when you start the “myfluvo®” app, see section 7.3. This IP address is entered in the browser address bar and then this device overview opens.

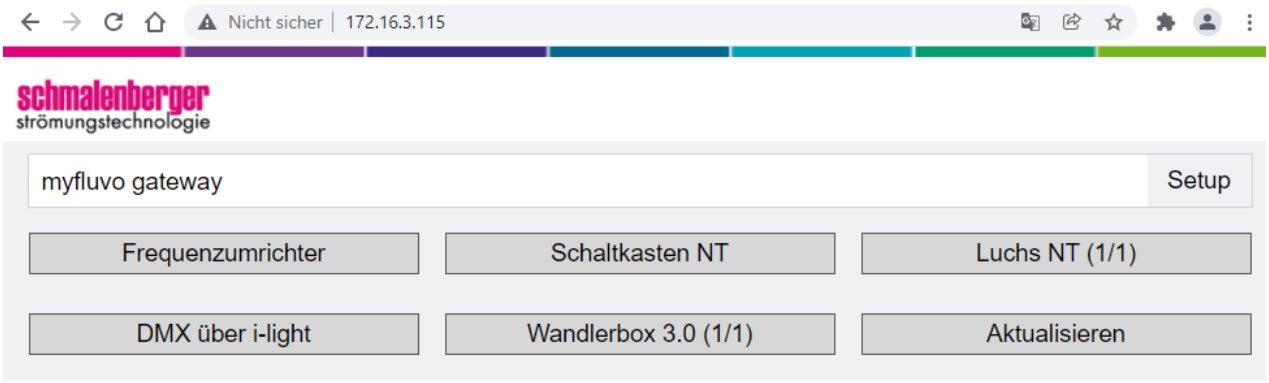


Figure 10

The overview shows the possible devices to be connected.

Devices that were recognized during initialisation and are active are displayed in ( ) e.g. converter box (1/1) LuchsNT (1/1)

If a device has been recognised but is currently inactive, this is indicated as follows:

Converter box (0/1) LuchsNT (0/1)

Inactive means that the gateway currently has no connection to the device.

Check that the device is supplied with mains voltage and that the bus line is connected.

You can access the device settings menu via Setup.

Here you can

- teach-in bus subscribers
- configure the network connection
- change the app password
- read out device information.

8.2 Set-up - Settings

8.2.1 Teach-in mode

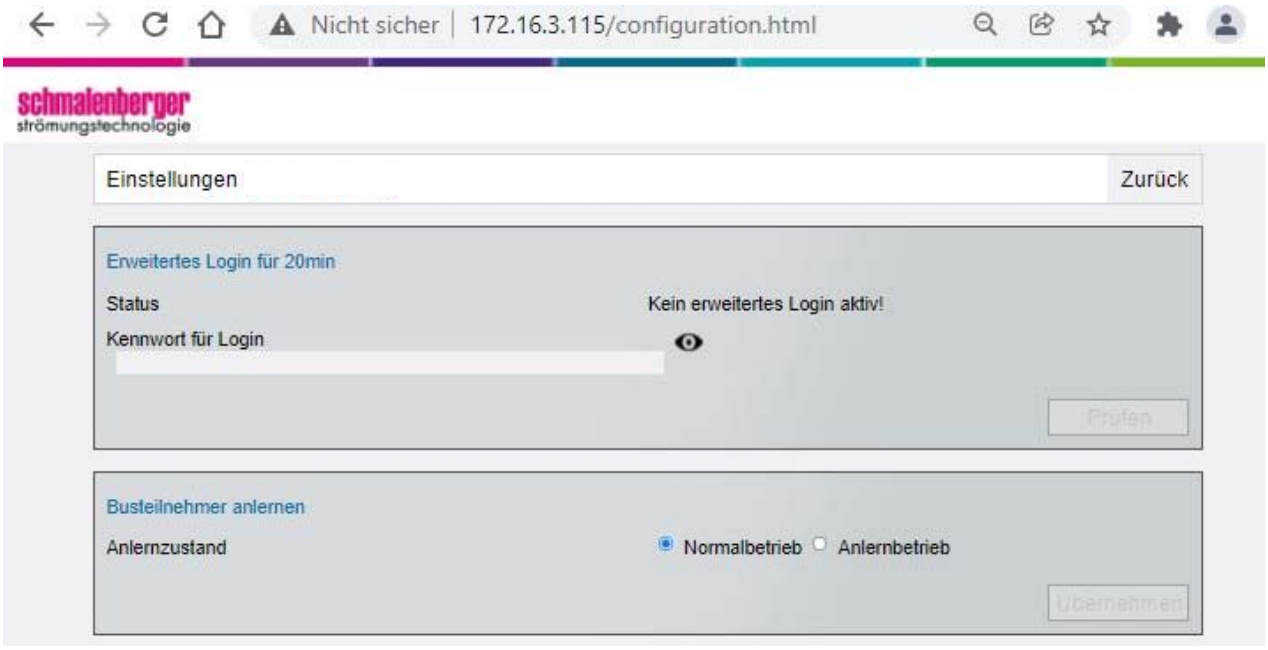


Figure 11

In teach-in mode, all stored bus subscribers are deleted and a new initialisation process is started, see chapter 7.2

This procedure is required when devices are replaced or completely removed.

8.2.2 Changing the myfluvo® password

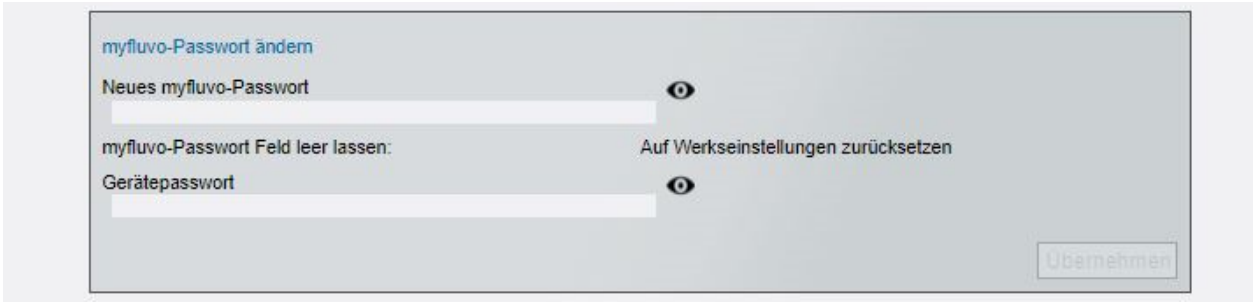


Figure 12

In the delivery state, the device password and the “myfluvo®” password are identical. To create an individual “myfluvo®” password, enter your desired new “myfluvo®” password and confirm it by entering the device password. The device password can be found in the terminal compartment under 4.2 device-specific data or on the device card. The “myfluvo®” password can be reset to the factory setting by leaving the field blank and confirming with the device password.

8.2.3 Device information

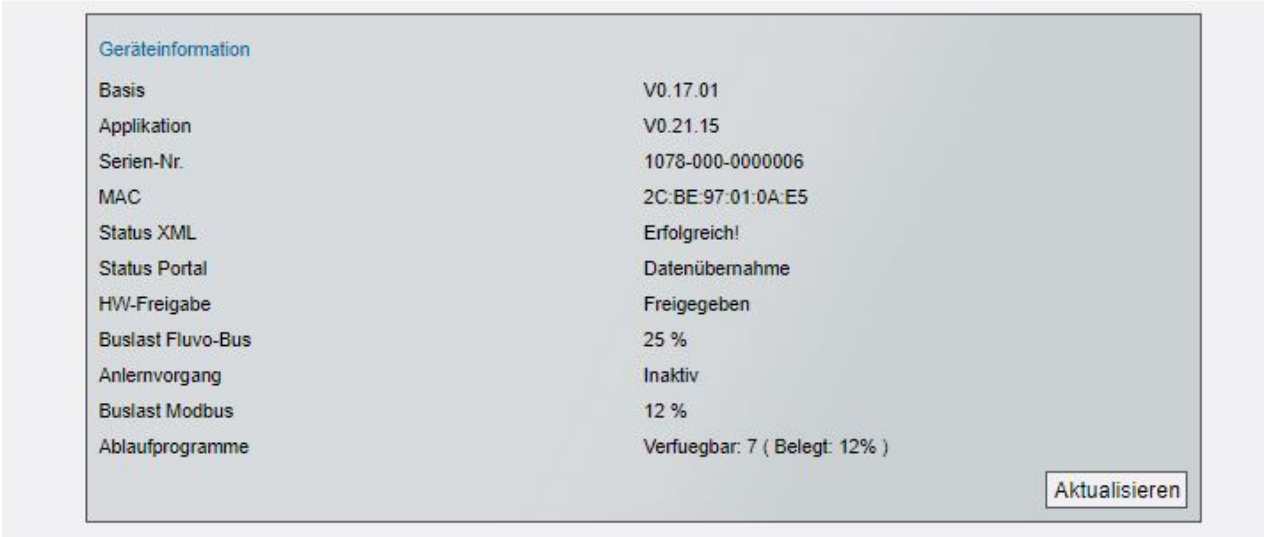


Figure 13

8.2.4 Network settings

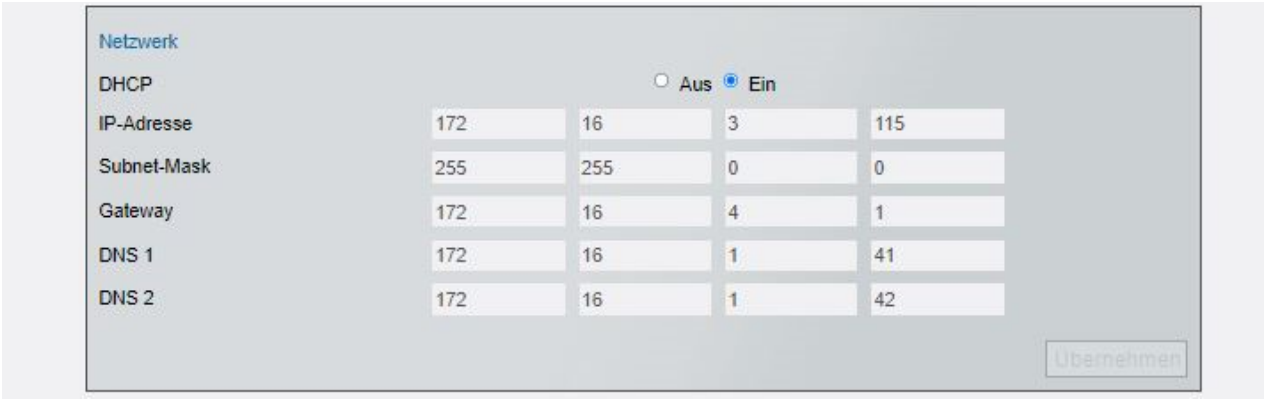


Figure 14

In the delivery state, DHCP is switched to active.

8.3 Converter box – GSA (additional information)

The GSA is installed with a converter box as standard, see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**, and controls the associated FU via the analogue signal.

Converter box power supply in combination with the gateway

Supply the converter box via the 24V voltage source in the gateway. If the converter box is already supplied via the 24V of the drive controller, a GND connection must be established between the converter box and the gateway.

Up to 6 addresses can be set in the converter box via the programme selector switch.

The recognised device address is displayed with an *.

The assignment to the FU can be read in the status of the converter box. This information can be used to change the speed levels, for example.

You can read out the current status of the device in the status of the converter box.

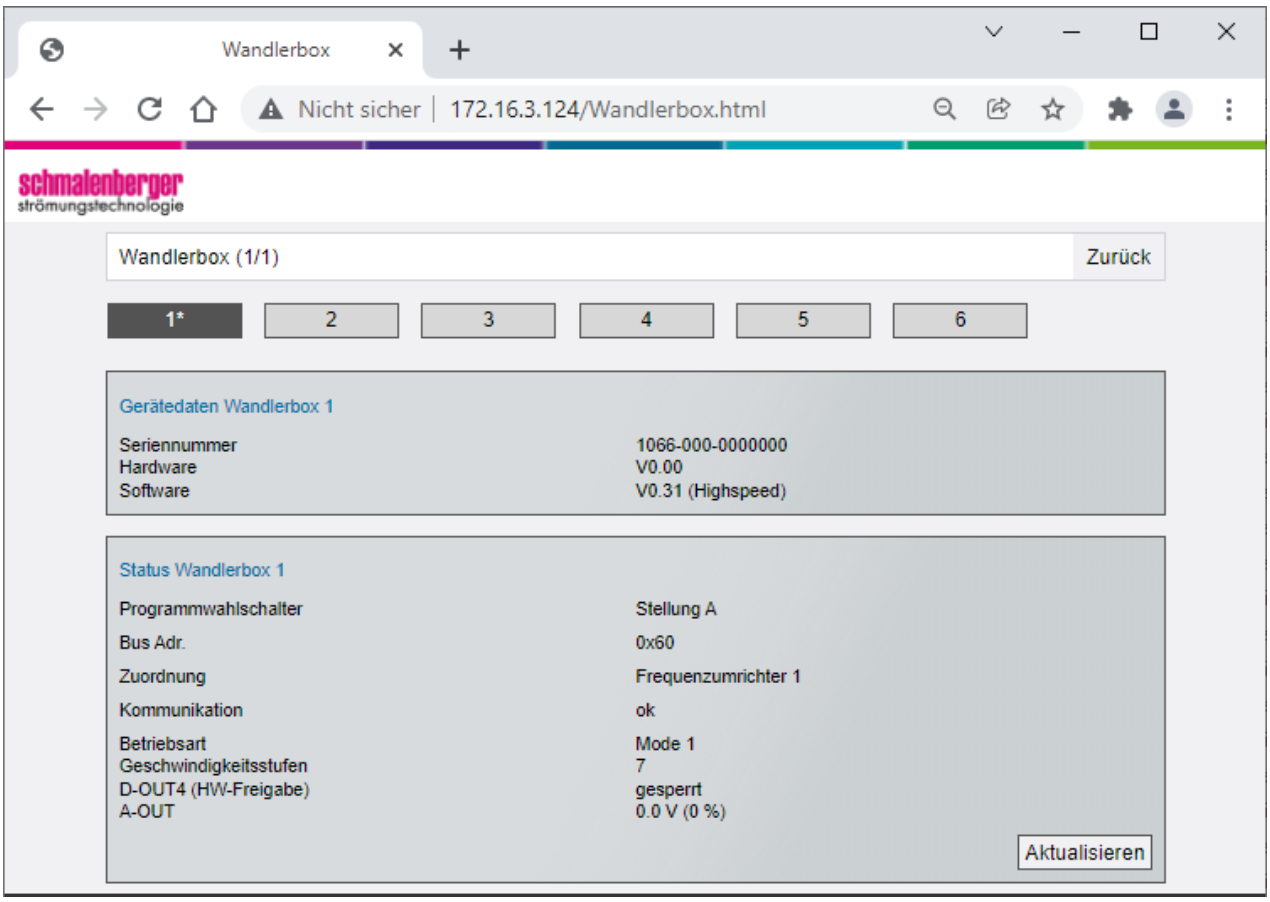


Figure 15

8.4 Frequency inverter FU (additional information)

The FU has a Modbus interface as standard. By means of an optional connection cable, see chapter 0, additional status information of the FU can be read out.

In this menu item it is possible to change the speed levels from 7 to up to 3 steps. The change is implemented in the corresponding active converter box.

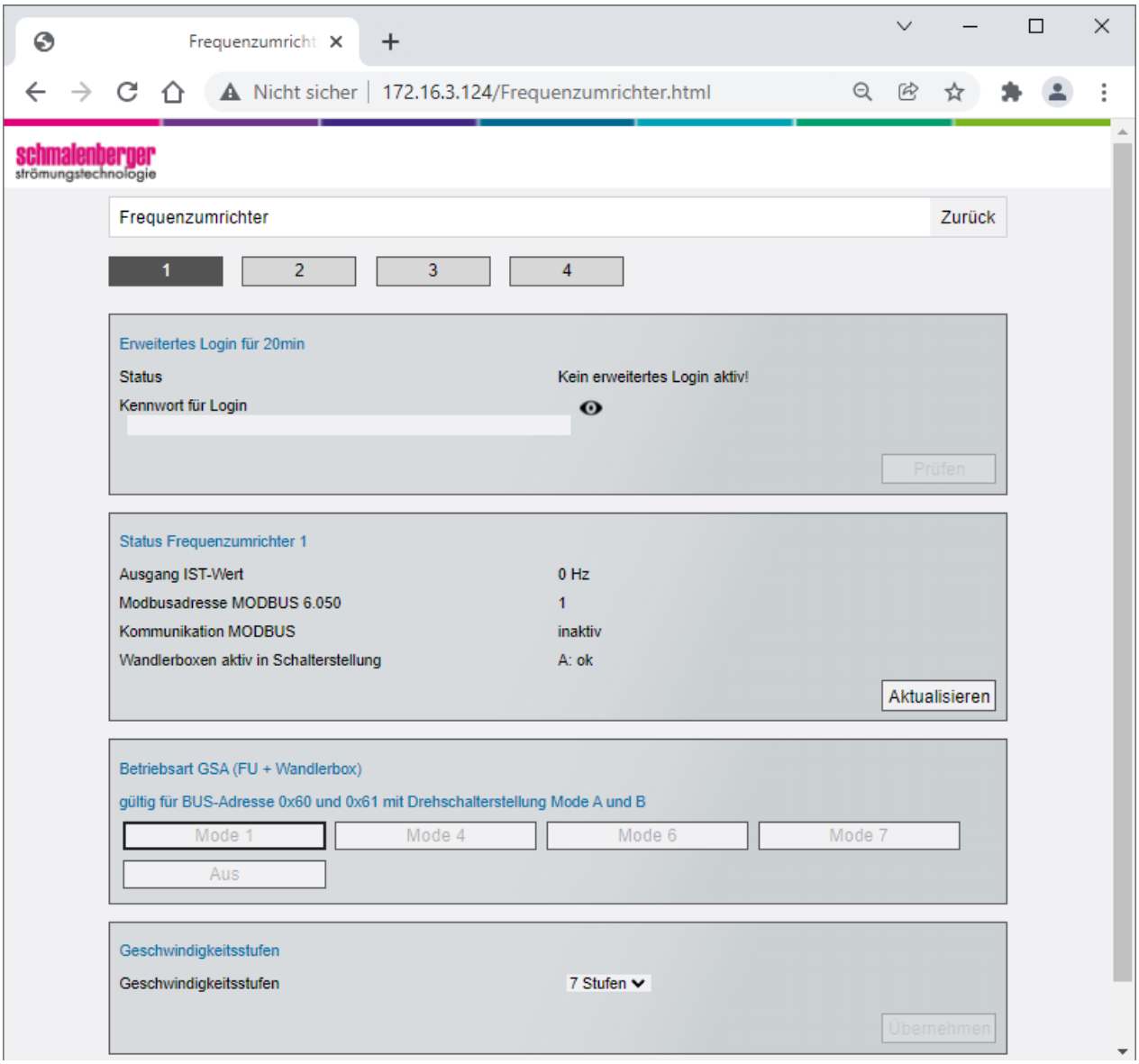


Figure 16

8.5 DMX via i-light

This menu shows the current DMX output status.
DMX communication can be switched OFF or ON.
When switched off, the DMX control function is not offered in the “myfluvo®” APP.

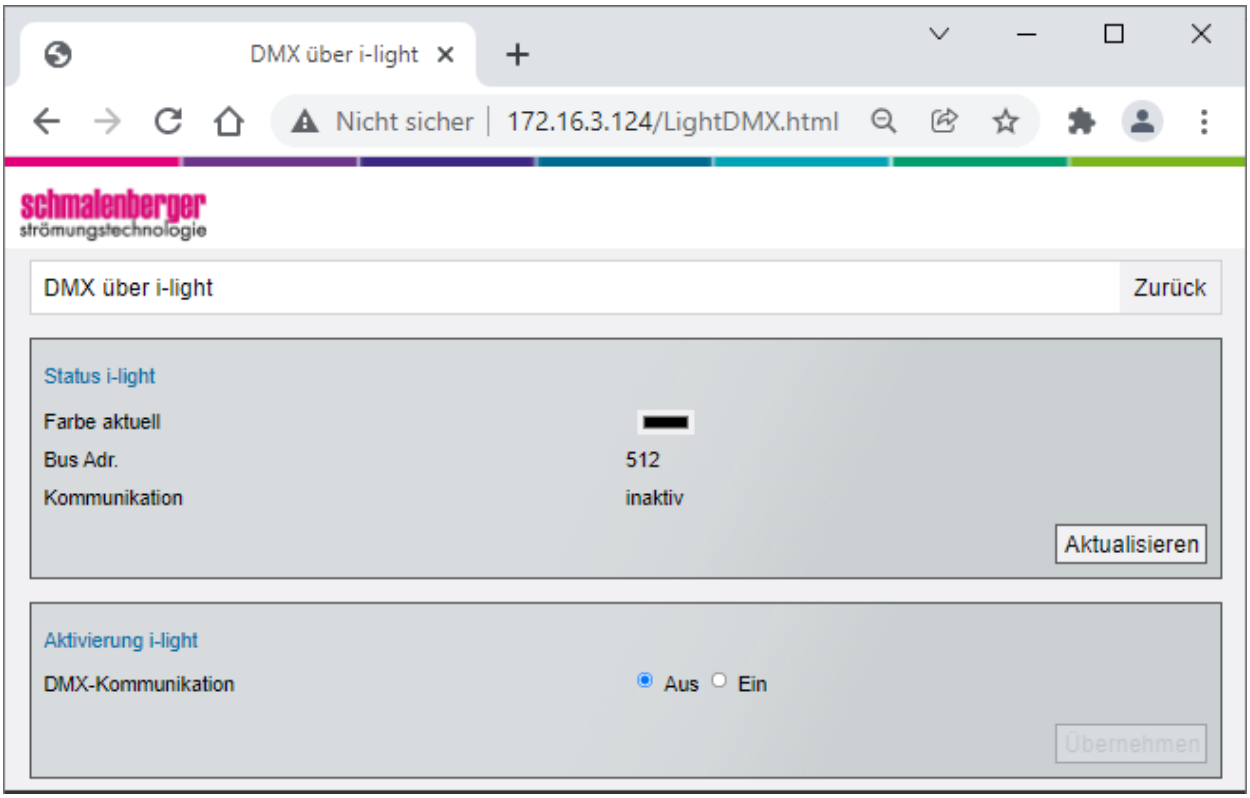


Figure 17

Importer:
Certikin International Ltd
4 Tungsten Park
Colletts Way
Witney
Oxfordshire, OX29 0AZ
United Kingdom
www.certikin.co.uk

Manufacturer:
Schmalenberger GmbH + Co. KG
Strömungstechnologie
Im Schelmen 9 – 11
D-72072 Tübingen / Germany

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