



# GEFASOFT

## User Manual



## LUCON® Light Source Controller

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User manual for LUCON® LED controller

**Article-No.:**           0002 0425           LUCON® Master  
                              0002 0426           LUCON® Slave  
                              0003 8732           LUCON® Com

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# 1 General

The GEFASOFT LUCON® series light source controller provides different operation modes like flash, strobe, continuous or switched operation for driving various types of industrial light sources.

Per light source one LUCON® module is required. The master / slave architecture makes it very simple to expand the controller system for up to 16 different and independent industrial light sources.

The single communication interface on the LUCON® master module allows to configure and control all 16 connected light channels.

The status LEDs on the LUCON® modules provide a quick overview about the current operation condition of the system.

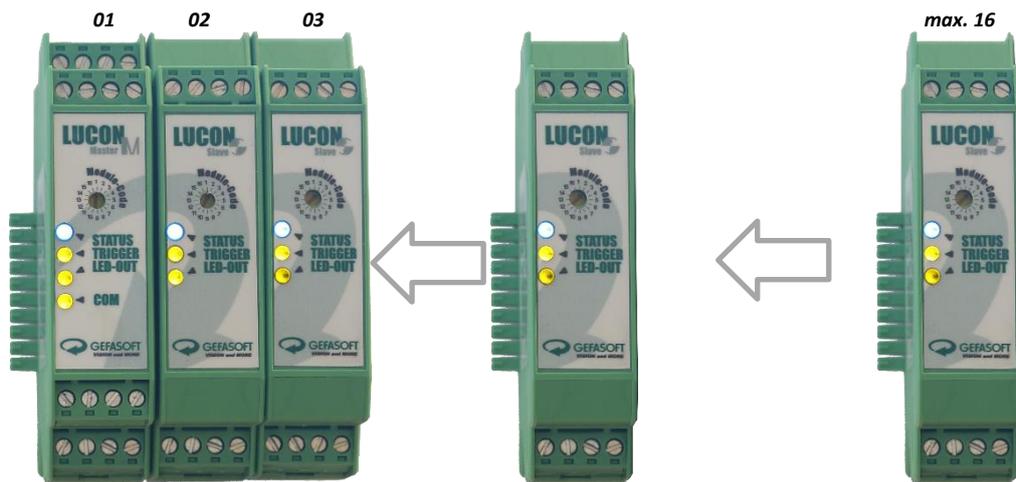
In addition to the LUCON® master module with power unit and RS232 interface, there is the LUCON® Com module. This has both an RS232 interface and an Ethernet interface, but no power section.

## Features:

- + Master module with integrated light controller
- + Connect to 15/16 slave modules
- + A single master controls up to 16 channels
- + flash, strobe, continuous or switched operation
- + Control of timing, duration/width and delay

## Benefits:

- + No cooling required
- + flexible system configuration
- + light protection circuit



LUCON®-S slave module  
Article No.: 0002 0426

LUCON®-M master module  
Article No.: 0002 0425

Figure 1 add light channels with LUCON® master / slave architecture

## 2 Applications

LUCON® is designed to provide perfect control of light sources and illumination conditions for image processing applications and scene illumination in visual inspection and microscopic quality control

The independent control of up to 16 different light sources enables you to tune your illumination conditions with maximum flexibility and precise control of intensity. Since parts can have complex geometries and surfaces, more than one camera and various lights may be necessary. The LUCON® system allows to switch between light sources, change intensity or change the operation mode per channel to be able to adapt to the application requirements.

The LUCON® System is paired with the LUMOS software, a PC-controlled interface DLL and configuration tool. The graphical LUMOS user interface makes it very simple to configure your light control setup for any application. As a user, you can adjust the various operation modes per light source, set the LUCON® light parameters (voltage, current, limits, delay timing, etc.) and control the output intensity. All configuration can be saved to non-volatile internal memory (EPROM) on the LUCON® module.

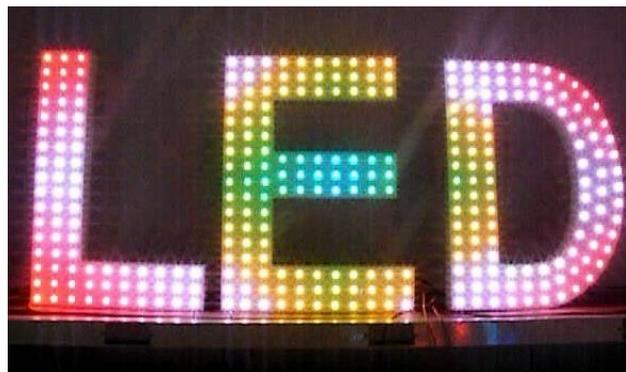


Figure 2 LUCON® in master-slave configuration inside an automated optical inspection system

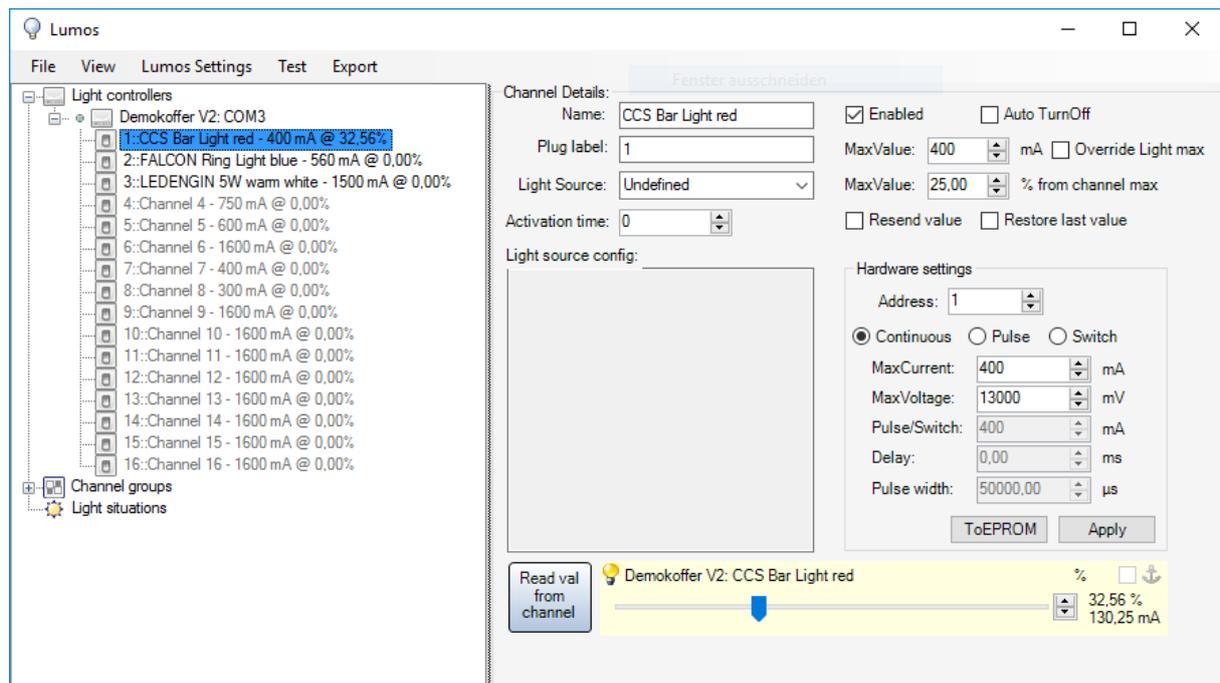


Figure 3 Screenshot of LUMOS configuration software

### 3 Technical Data

#### 3.1 Specifications

Specifications	Description			
Interfaces	Communication	Master	1x RS-232, 1x Integrated bus connector	
		Slave	1x Integrated bus connector	
		Com	1x RS-232, 1x Integrated bus connector, 1xRJ45	
	Power	Master	1x Power-Input	
		Slave	1x Integrated bus connector	
		Com	1x Power-Input	
	Lighting	Master	1x LED-Output, 1x Trigger	
		Slave	1x LED-Output, 1x Trigger	
LED indicators	System LED	Master	1x Status, 1x Trigger, 1x Output, 1x Communication	
		Slave	1x Status, 1x Trigger, 1x Output	
		Com	1x Communication	
	Port LED	Com	LAN: Link/Active	
Physical	Housing		Polyamide (RAL 6021)	
	Installation		DIN Rail	
	Dimensions (W x H x D)		22,6 mm x 92mm x 99 mm	
	Weight	Master	97 g	
Slave		92 g		
Com		90 g		
Environment	Operating Temperature		0°C - 50°C	
	Storage Temperature		-50°C - 80°C	
	Ambient Relative Humidity		10% - 95%	
Ethernet Communications	Compatibility		IEEE 802.3, IEEE 802.3u	
	Speed		10/100 Mbps	
	Port		8-Pin RJ45	
	UDP-Port		50000	
	Protection		Built-in 1,5 kV magnetic isolation	
Serial Communications	Parity		None	
	Flow Control		None	
	Data Bits		8	
	Stop Bits		1	
	Baud Rate		5600, 19200, 38400, 57600, 115200 kbps	
	Protection		+/- 15 kV ESD for all signals	
Power	Current consumption	Master	2 A	
		Slave	1,8 A	
		Com	0,2 A	
	Power Input		10 - 40 V <sub>DC</sub>	
Output	Output voltage		0,7 - 35 V	
	Output current		Up to 1,6 A per channel	
	Step size		1 mA	
	Accuracy			typ. 300nA @ 1mA (30%) *
				typ. 1mA @ 50mA (2%) *
				typ. 4mA @ 60mA (6.66%) *
				typ. 30mA @ 1600mA (1.875%) *
Response time		Über ext. Trigger: < 0,01ms * Über serielle Kommunikation: < 4ms (inkl. Komm.)*		
Trigger input		low-Level: < 2V; high-Level: > 7,5V (-40 V to +40 V max.)		

	Number of modules	Master	Up to 15 Slaves
		Com	Up to 16 Slaves
	Modes		Flash, pulse, continuous, trigger
Software	Configuration		LUMOS, console, web browser

\* reference values measured with Luxeon III Star LED (Philips Lumileds)

### 3.2 Hardware

#### 3.2.1 Front View

The following view shows a LUCON®-M master module.

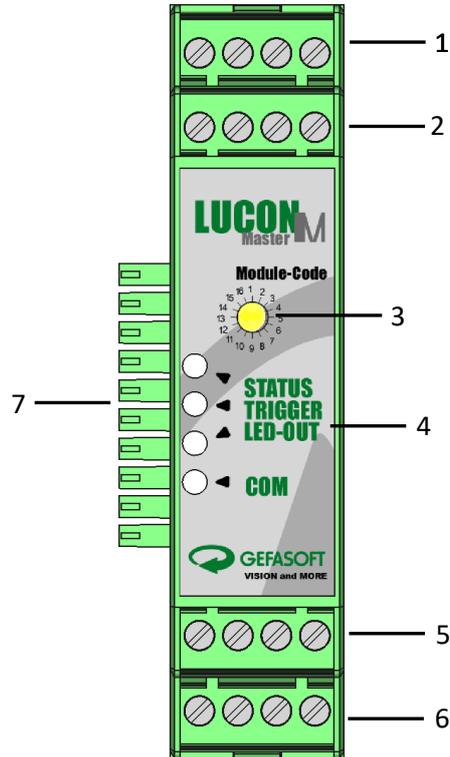


Figure 4 Front view of LUCON®-M Master

No.	Description
1	Supply Voltage
2	Trigger for lighting
3	Device number (1-16)
4	Status LEDs
5	RS232 communication interface
6	Output to the LED lighting
7	Integrated bus connector

The following view shows a LUCON®-S slave module.

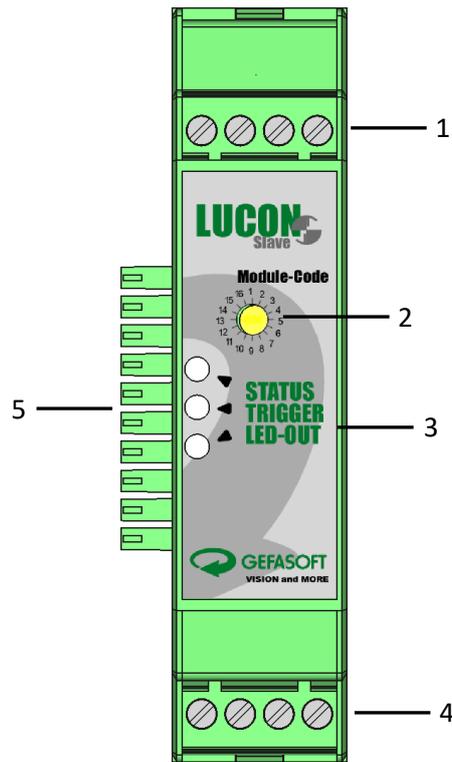


Figure 5 Front view of LUCON®-S slave

No.	Description
1	Trigger for lighting
2	Device number (1-16)
3	Status LEDs
4	Output to the LED lighting
5	Integrated bus connector

The following view shows a LUCON®-C Com module.

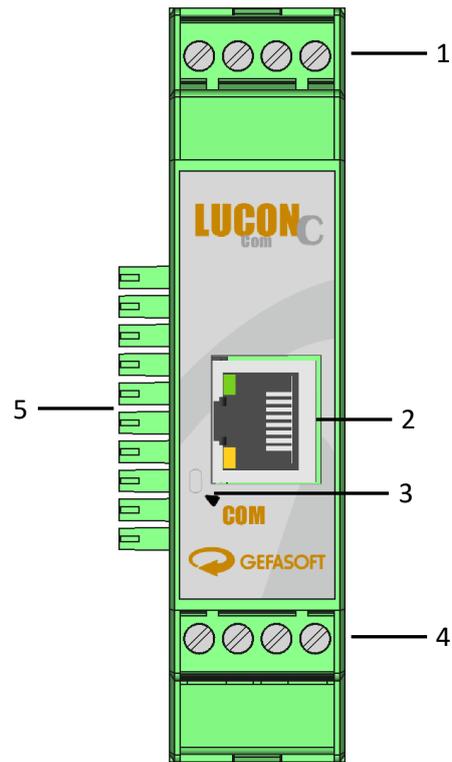


Figure 6 Front view LUCON®-C Com

No.	Description
1	Supply Voltage
2	Ethernet communication interface (RJ45)
3	Status LED
4	RS232 communication interface
5	Integrated bus connector

### 3.2.2 Rear View

The following view shows a LUCON<sup>®</sup>-M Master, a LUCON<sup>®</sup>-S Slave and a LUCON<sup>®</sup>-C Com Modul.

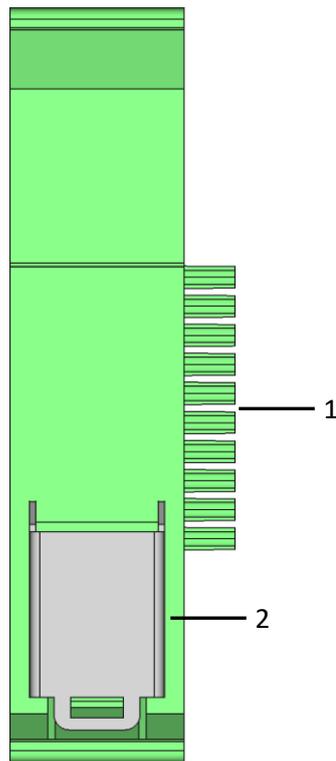


Figure 7 Rear view of LUCON<sup>®</sup> modules

No.	Description
1	Integrated bus connector
2	DIN-Rail mounting

### 3.2.3 Top View

The following view shows a LUCON<sup>®</sup>-M master module.

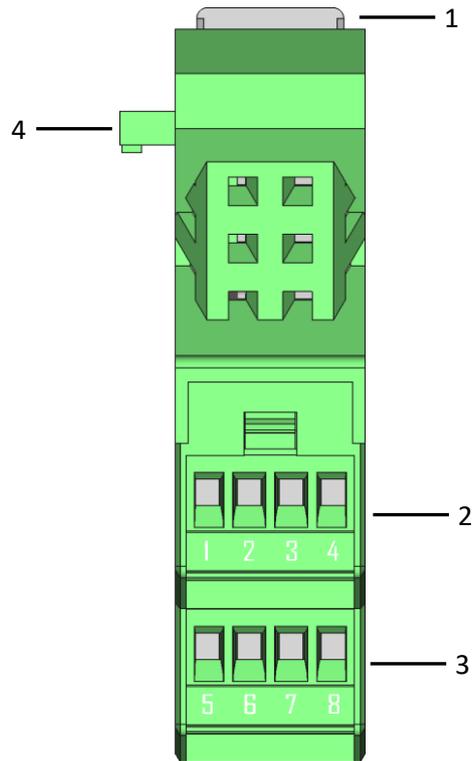


Figure 8 Top view of LUCON<sup>®</sup>-M Master

No.	Description
1	DIN-Rail mounting
2	1 Supply GND 2 Supply GND (required if more than 8 power modules are connected) 3 Supply +10 V ... +40 V 4 Supply +10 V ... +40 V (required if more than 8 power modules are connected)
3	5 Trigger GND 6 - 7 -40 V bis +40 V; HIGH > 7,5 V 8 -
4	Integrated bus connector

The following view shows a LUCON®-S slave module.

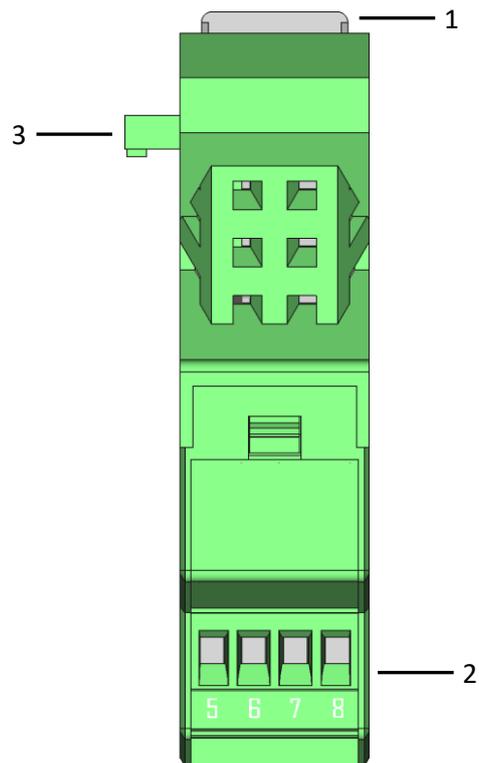


Figure 9 Top view of LUCON®-S slave

No.	Description
1	DIN-Rail mounting
2	1 Trigger GND 2 - 3 -40 V bis +40 V; HIGH > 7,5 V 4 -
3	Integrated bus connector

The following view shows a LUCON®-C Com module.

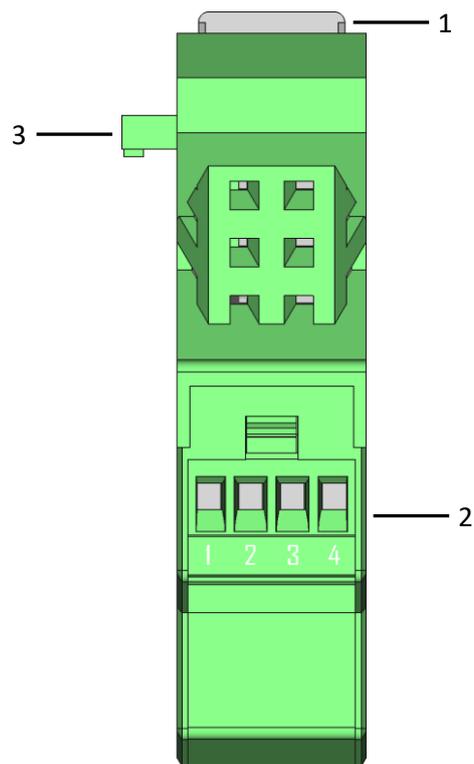


Figure 10 Top view of LUCON®-C Com

No.	Description
1	DIN-Rail mounting
2	1 Supply GND 2 Supply GND (required if more than 8 power modules are connected) 3 Supply +10 V ... +40 V 4 Supply +10 V ... +40 V (required if more than 8 power modules are connected)
4	Integrated bus connector

### 3.2.4 Bottom View

The following view shows a LUCON®-M master module.

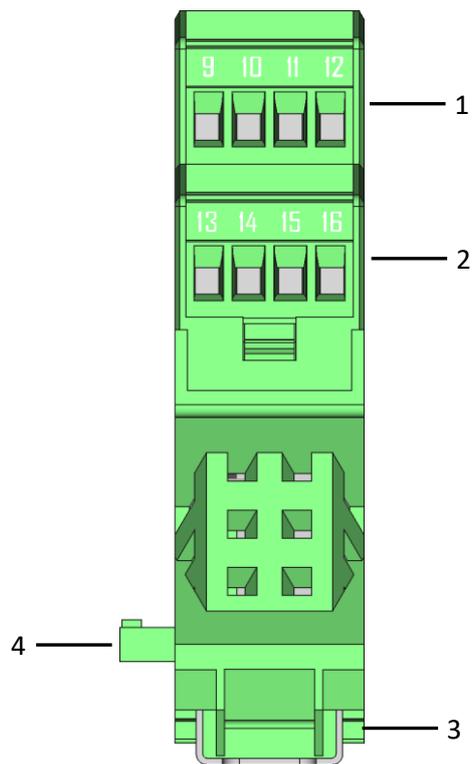


Figure 11 Bottom view LUCON®-M Master

Nr.	Description
1	9 RS232 TXD 10 RS232 RXD 11 / 12 RS232 GND
2	13 Lighting + 14 / 15 Lighting - 16 /
3	DIN-Rail mounting
4	Integrated bus connector

The following view shows a LUCON<sup>®</sup>-S slave module.

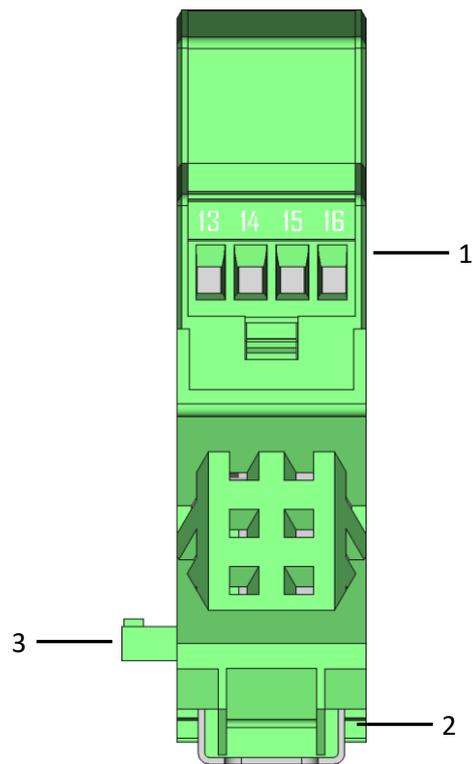


Figure 12 Bottom view of LUCON<sup>®</sup>-S slave

No.	Description
1	13 Lighting + 14 / 15 Lighting - 16 /
2	DIN-Rail mounting
3	Integrated bus connector

The following view shows a LUCON®-C Com module.

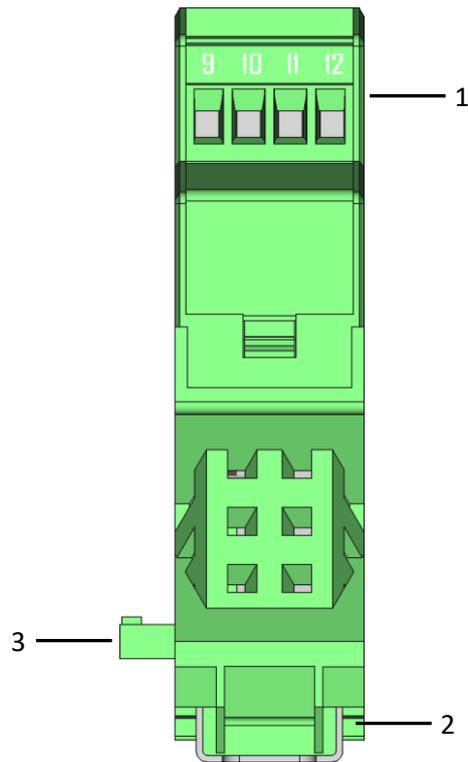


Figure 13 Bottom view LUCON®-C Com

No.	Description
1	9 RS232 TXD 10 RS232 RXD 11 / 12 RS232 GND
2	DIN-Rail mounting
3	Integrated bus connector

### 3.2.5 Left View

The following views show a LUCON®-M master, a LUCON®-S slave and a LUCON®-C Com module.

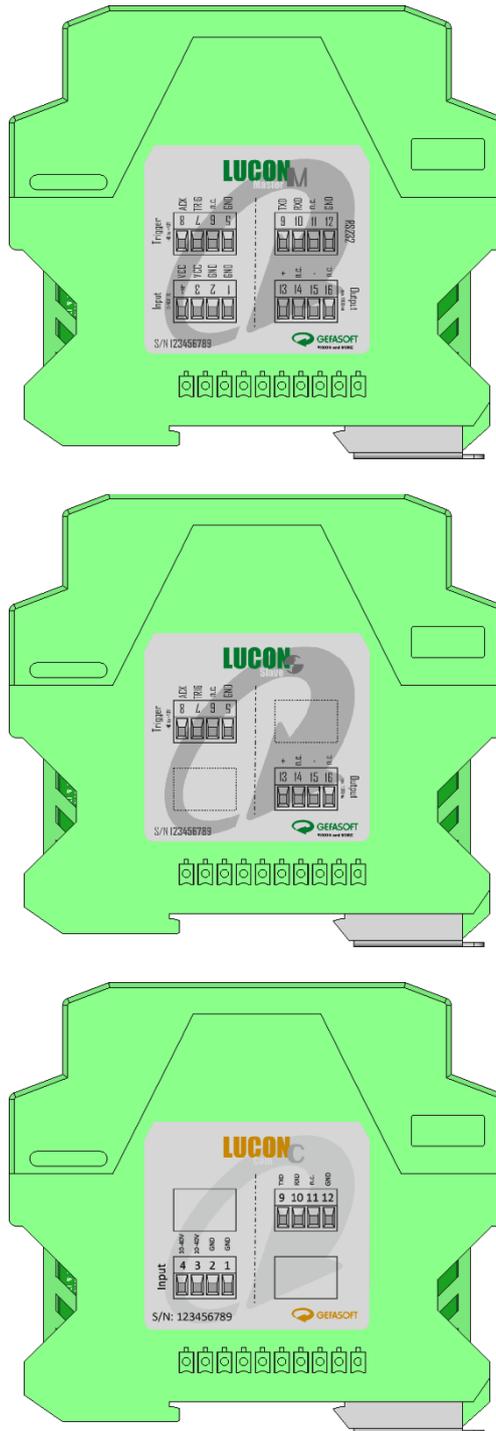


Figure 14 Left side view of the LUCON® modules

### 3.2.6 Right View

The following views show a LUCON®-M master, a LUCON®-S slave and a LUCON®-C Com module.



Figure 15 Right side view of the LUCON® modules

### 3.3 Dimensions

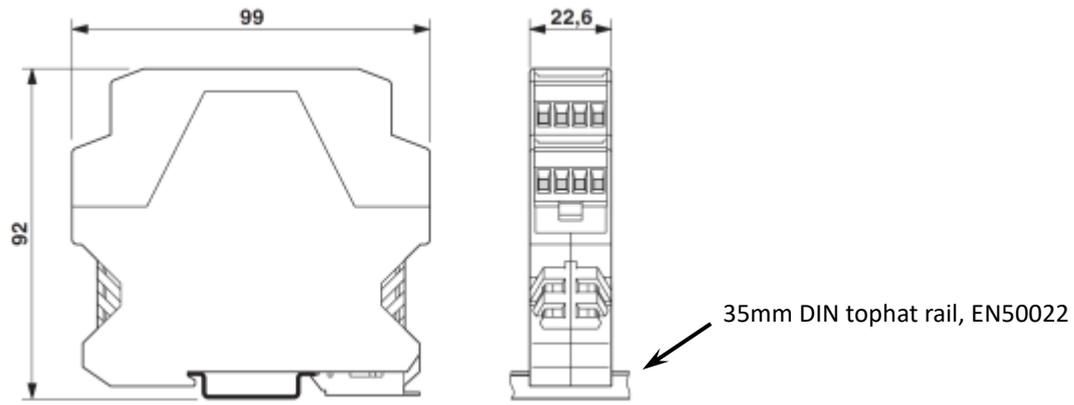


Figure 16 Dimensions in mm

## 4 LUCON® configuration and setup

### 4.1 Getting started

- 1) Connect as many LUCON® S slave modules to your LUCON® M master module (maximum 15 slave-modules) or to your LUCON® C com module (maximum 16 slave-modules) to match the number of light sources you need to drive.
- 2) Mount the modules to a 35mm DIN rail.
- 3) Use a flat, small screwdriver to select a unique module code for every LUCON® module. It is recommended to set the master module to channel 01 and then use channels 02 to 16 for the slaves in ascending order as they are connected to the master.
- 4) Connect the LUCON® modules to your equipment according to the wiring diagram.

### 4.2 Setting the parameters

If you run a LUCON® device with a specific LED light source for the first time, it is recommended to initially define and set the limits for output voltage and current.

These values are necessary to protect the connected LED light and ensure a safe operation of the device (see chapter 5.6 Commands LUCON®-S, commands: SxxL, SxxV).

The maximum operating current for a given LED light source is defined by the manufacturer of the LED light source or can be calculated from operating voltage and power specification.

The real and precise operation voltage is typically not known. The correct value can be determined by following the below procedure and requires no extra utilities:

- 1) Set the voltage limit to approx. 120 % of the expected value
- 2) Make sure you are in continuous mode, set the nominal LED current (see chapter 5.6 Commands LUCON®-S, command: SxxMC|xxx). The status LED "LED-OUT" should be blue. Otherwise, the voltage limit is set too low or the supply voltage is too low.
- 3) After a few seconds, get the output voltage with the read command (see chapter 5.6 Commands LUCON®-S, command: RxxU).
- 4) Set voltage limit to the readout value plus some control buffer (typ. 500mV), (see chapter 5.6 Commands LUCON®-S, command: SxxV|xxx).
- 5) It is recommended to save the values to EPROM (see chapter 5.6 Commands LUCON®-S, command: SxxS). When saved to EPROM, the values are set automatically on power on. Our software tools LUMOS and LuconApp are resending these values after the devices are powered on or the tool has been started.

## 4.3 Control modes and operating conditions

### 4.3.1 Control modes

Each single LUCON® device can run one of the following control modes (see chapter 5.6 Commands LUCON®-S):

#### Continuous mode:

The light is switched on and off and the brightness is changed via the respective commands. The light source is continuously driven with the selected current by the command.

#### Switch-mode:

The light source is driven with the selected current as long as the trigger is active (trigger level).

#### Pulse-mode:

The light source is driven for the selected duration and with the selected current after receiving a trigger signal (trigger edge).

#### None-mode:

In this mode, any output is disabled, and the device is ready to receive commands. This mode is helpful to run with predefined configuration parameters saved to EEPROM without a specific control mode or output.

### 4.3.2 Operating conditions

The four control modes described above are available in one of the two operating conditions of the LUCON® system:

#### Command based operation:

The LUCON®-M master module is connected to a PC or PLC via the serial communication interface. The light sources connected the single LUCON® devices are controlled via commands (ON/OFF, brightness, control mode, ...).

#### Stand-alone operation:

If an operational state including all parameters is stored to EEPROM, this operational state is re-established after power on of the device (see chapter 5.6 Commands LUCON®-S, command: SxxS).

In this case, a communication to a PC is only necessary for the first setup to set the required parameters one time.

Because all the parameters are stored on the device LUCON® itself, a LUCON®-M (master module) or a LUCON®-C (com module) basically would be needed for setup only.

A combined operation is possible.

## 4.4 Web interface in the LUCON®-C Com module

In addition to configuration using the GEFASOFT software tools LUMOS and LuconApp, the LUCON®-C Com module offers the option of parameterizing the modules via a web interface.

In order to access the web interface, the IP address of the LUCON®-C Com module must be entered in a browser (Default 10.0.30.2, see Chapter 5.5 LUCON®-C commands, command: R00IP):

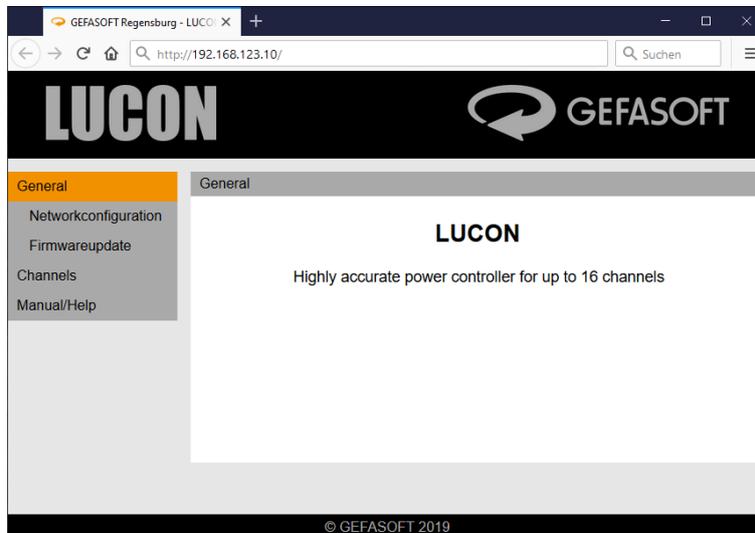


Figure 17 Web interface for configuring the LUCON®

In the menu on the left side there are various sub-items, such as the network configuration, the option for a firmware update and the configuration of the individual LUCON®-S slave channels.

### 4.4.1 Network settings

The network settings are only adopted after restarting the LUCON®-C Com module. However, the temporary parameters ("Save temporary") are deleted after a restart. Therefore, the network settings must be saved permanently with "Save permanent".

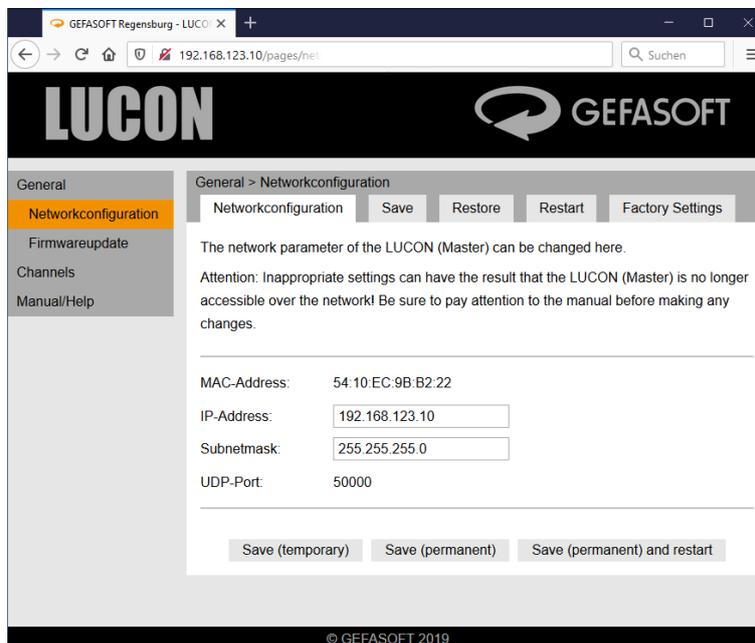


Figure 18 LUCON®-C network configuration

#### 4.4.2 Channel configuration

The configuration of the individual channels can be found under "Channels". A status page ("Status"), a page with the configuration ("Configuration") and a page for resetting to the factory settings ("Factory Settings") are available separately for each channel.

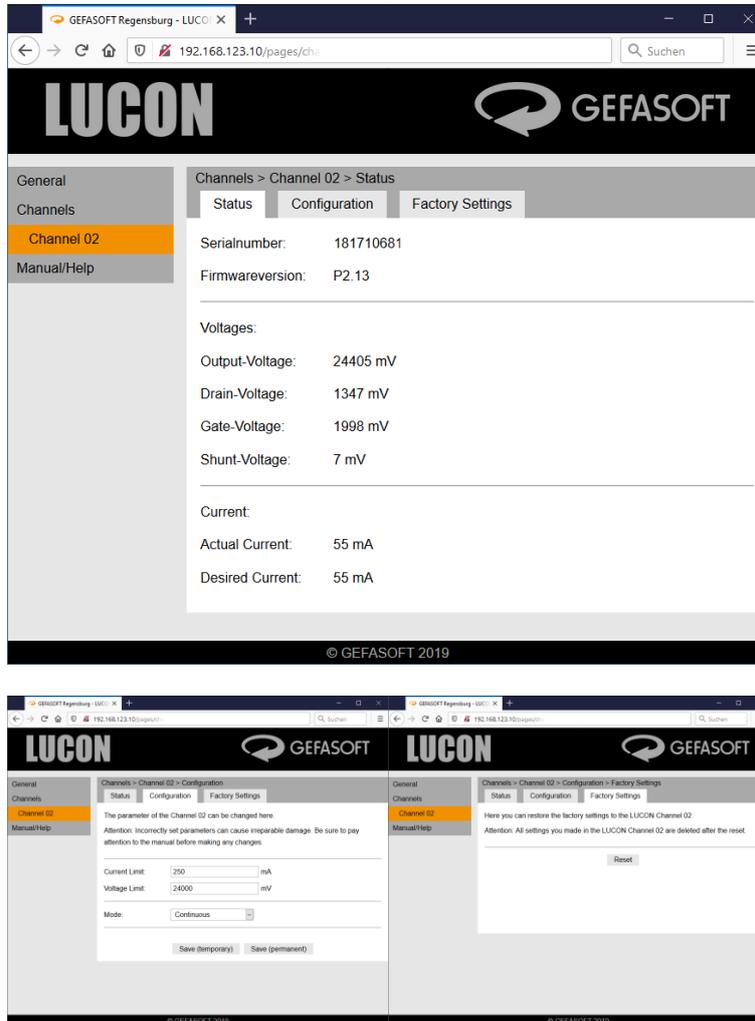


Figure 19 LUCON®-S channel configuration

#### 4.4.3 Firmware update from the LUCON®-C module

Via the menu items "General" and then "Firmware update" the sub-page for updating the firmware is reached.

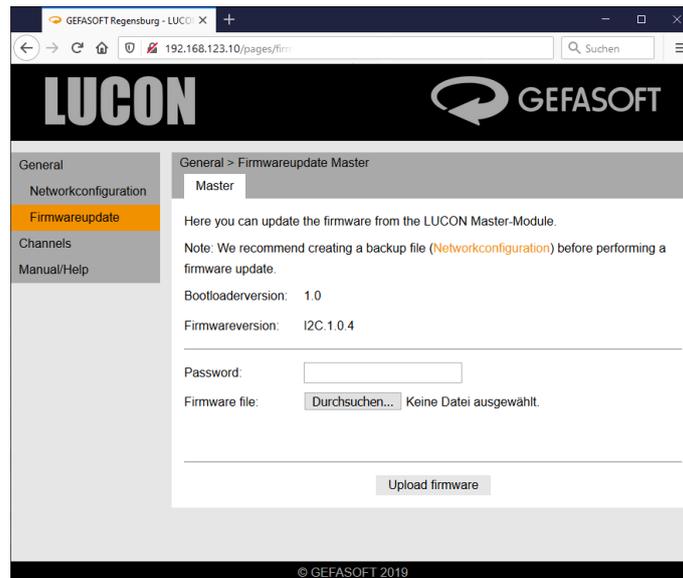


Figure 20 Firmware update LUCON®-C module

**Attention:** A firmware update is always associated with a risk. A power failure during the process can mean that the module can no longer be used and must be replaced. An update should therefore only be carried out on the advice and after consultation with GEFASOFT.

#### 4.4.4 Firmware update from the LUCON®-M module

A firmware update of the LUCON®-M module is not supported.

#### 4.4.5 Firmware update from the LUCON®-S module

A firmware update of the LUCON®-S module via the web interface is not supported.

## 5 Communication

### 5.1 RS232 Interface

Type	Serial interface
Protocol	RS232
Baud rate	57600 kbit/s
Data bits	8
Parity	None
Stop bits	1
Flow control	None

### 5.2 Ethernet Interface

Type	Ethernet interface (RJ45)
IP	10.0.30.2 (can be changed, see chapter 5.5 LUCON <sup>®</sup> -C commands, commands: SxxIP)
Protocol	UDP
Port	50000

### 5.3 Syntax

Each command follows this scheme:

<p>'S' or 'R' + channel number + command descriptor + optional: values + delimiter</p>
--

'S' or 'R'	<p>'S' specifies a SET-command. The device responds with the echo. The Answer is finished with a '&gt;' character.</p> <p>'R' specifies a READ-command. The device responds with the echo and the requested value. The Answer is finished with a '&gt;' character.</p>
Channel number	<p>Chanel number of the module from 00 to 16; 00 specifies a command for the communication module (LUCON<sup>®</sup>-M or LUCON<sup>®</sup>-C) 01 to 16 specifies a power module (master or slave) The channel number is set via rotary switch on the module front side.</p>
Command	<p>A command is specified by a one to three-character descriptor; see list of commands below</p>
Value	<p>Command dependent: READ-commands have no value; SET-commands can have 1 to 16 values; each value starts with a ' ' symbol</p>
Delimiter	<p>for extended compatibility of the communication interface, the following delimiter configurations are available:</p> <p style="padding-left: 40px;">\r\n (carriage return: 0x0a, line feed: 0x0d)  \r (carriage return: 0x0A)  \n (line feed: 0x0D)</p>

## 5.4 Commands LUCON®-M module (address: 00)

SET-commands		
Command	Description	Example / Response (without delimiter)
MCM	setting current in continuous mode on multiple output modules; Syntax of values is:  "channel", "current value"...	S00MCM 01,60 04,120 (set channel 01 to 60mA and channel 04 to 120mA)
DB	activating / deactivating additional debug-outputs of the Com-Module; 0:OFF, 1:ON	S00DB 0
S	Save parameters to EEPROM	S00S
BS	Setting baud rate	S00BS 57600 (allowed values: 9600, 19200, 38400, 57600 or 115200)

READ- commands		
Command	Description	Example / Response (without delimiter)
DB	Reading the debug output state	R00DB response: '0' or '1'
E	Reading the error state	R00E response: '0' or '1'
M	Reading last error message	R00M response: '0' or '1' (error state) e.g. '0x0304' (system time in HEX) e.g. '0x02F4' (error time stamp)
F	Read firmware version	R00F Response: e.g. 'C0.1b'
R	Read system time (RTC)	R00R Response: e.g. '0x0304'

## 5.5 Commands LUCON®-C module (address: 00)

SET-commands		
Command	Description	Example / Response (without delimiter)
MCM	setting current in continuous mode on multiple output modules; Syntax of values is:  "channel", "current value"...	S00MCM 01,60 04,120 (set channel 01 to 60mA and channel 04 to 120mA)
IP	Set IP address (will only be accepted after a re-start)	S00IP 192.168.123.10
SM	Set subnet mask (will only be accepted after a re-start)	S00SM 255.255.255.0
GW	Set gateway address (will only be accepted after a restart)	S00GW 192.168.123.1
BS	Setting baud rate	S00BS 57600 (allowed values: 9600, 19200, 38400, 57600 or 115200)
FR	Restore factory settings (Com module only)	S00FR
R	Restart the Com module	S00R
S	save all parameters in the EEPROM	S00S
DB	Set debug output	S00DB 1,128 (interface, level)

READ-commands		
Command	Description	Example / Response (without delimiter)
IP	Read IP-address	R00IP Answer: e.g. '192.168.123.10'
SM	Read subnet mask	R00SM Answer: e.g. '255.255.255.0'
GW	Read gateway address	R00GW Answer: e.g. '192.168.123.1'
UDP	Read UDP port	R00UDP Answer: '50000'
MAC	Read MAC address	R00MAC Answer: e.g. '54:10:EC:9A:A7:11'
F	Read firmware version	R00F Answer: e.g. 'I2C.1.0.4'
SN	Read serial number	R00SN Answer: e.g. '200320001'
RTM	Read run time	R00RTM Answer: e.g. 'Runtime: 12:43:23' (hh:mm:ss)
DB	Read debug status	R00DB Answer: e.g. 'RS232, 1'
BS	Read baud rate (for RS232)	R00BS Answer: e.g. '57600'

## 5.6 Commands LUCON®-S Modul (address: 01 bis 16)

SET-commands		
Command	Description	Example / Response (without delimiter)
MC	Set current (mA) in continuous mode	S01MC 10
MT	Set current (mA) in switch mode (output current is driven as long as trigger is active)	S01MT 10
MD	Set current (mA), delay (ms) and duration (µs) in pulse mode	S01MD 10 0 100000 (current: 10mA, delay: 0ms, duration: 100ms)
ME	activate education mode; used for recalibrating the power module; adequate load must be applied; only for advanced users	S01E
MN	Set mode "None"; all outputs are deactivated	S00MN
L	defining output current limit (mA)	S01L 100
V	defining output voltage limit (mV)	S01V 24000
B	defining trigger-debounce-time, one step is 31,25ns; helps to mask spikes on the trigger line	S01B 30
S	save parameters to EEPROM	S01S
IT	inverts trigger edge (0 = pos. edge, 1 = neg. edge)	S01IT 1

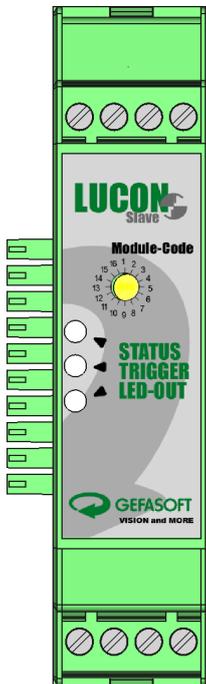
READ commands		
Command	Description	Example / Response (without delimiter)
T	read temperature (°C) from the power module	R01T Response: e.g. '30'
E	Read the error-state of the power module	R01E Response: '0' oder '1'
M	read last error message	R01M Response: '0' or '1' (error state) e.g. '0x0304' (system time in HEX) e.g. '0x02F4' (error time stamp)
F	Read firmware version	R01F Response: e.g. P0.1b
C	read current (mA); answer is: actual target	R01C Response: e.g. 0 60
D	Read pulse duration (µs)	R01D Response: e.g. 100
Y	Read pulse delay (ms)	R01Y Response: e.g. 0
B	read trigger debounce time; one step is 31,25ns	R01B Response: e.g. 30
L	read output current limit (mA)	R01L Response: e.g. 100
V	read output voltage limit (mV)	R01V Response: e.g. 24000
U	Read several system voltages for debug purposes	R01U Response: V <sub>out</sub> -voltage Drain-voltage Gate-voltage voltage over shunt

P	read parameter set: - Mode (None=0, Config=1, Current=2, Switch=3, Pulse=4) - current (mA) - current limit (mA) - voltage limit (mV) - flash delay (ms) - flash duration (µs) - circuit offset (ms) - ADCA Offset - ADCB Offset - Debug mode state - Parameter state	R01P Response: e.g. 2 60 mA 100 mA 24000 mV 0 ms 100 µs 2335 ms 101 -1228 0 204
R	Read system time (RTC)	R01R Answer: e.g. '0x0304'
IT	Read trigger edge setting (0 = pos. edge, 1= neg. edge)	R01IT Answer: e.g. '1'

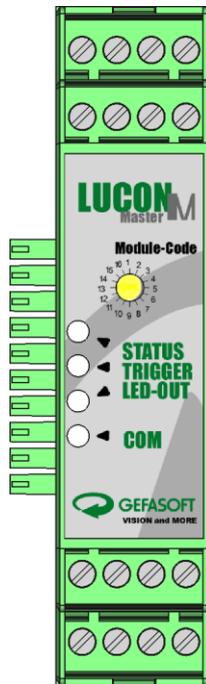
## 6 System status

### 6.1 Status LED

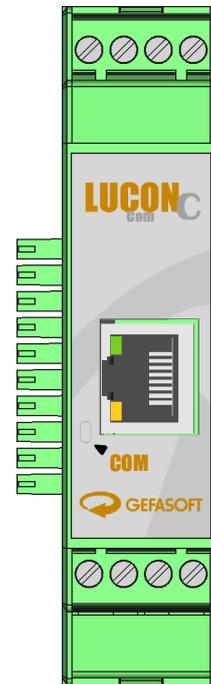
Status-LEDs are on the front side of the LUCON® device to give feedback about the current system status of the device.



LUCON®-S (slave module)  
3 status LEDs



LUCON®-M (master module)  
4 status LEDs



LUCON®-C (com module)  
1 status LED

**STATUS:** general state / error  
**TRIGGER:** Trigger state  
**LED-OUT:** output to the LED light

**COM:** communication state

## 6.2 Description of the single status LEDs

Name	Colour	Description
STATUS		general error <sup>1</sup>
		Status OK
		—
		—

TRIGGER		—
		INACTIVE trigger signal is not present (see edge settings in documentation “Communication”); default: high-active
		ACTIVE trigger signal is present (see edge settings in documentation “Communication”); default: high-active
		Selected mode does not use a trigger input (continuous mode)

LED-OUT		desired current value is not reachable / cannot be set <sup>1</sup> possible reasons: - input voltage too low - set voltage / current limit is reached - LED light source not / wrong connected
		READY Connected LED light source is off (no current)
		CURRENT OK Connected LED light source is driven with the set current value
		—

COM  (only master and com module)		COMMUNICATION ERROR <sup>2</sup> Possible root cause: - addressed module does not exist - invalid command - communication to master module is disturbed (wrong baud rate, cable length, ... ) - communication between master and slave module is disturbed
		STATUS OK
		NEW INCOMING DATA new data is received via interface; steady lighting: last command was not transferred completely (delimiter missing)
		—

<sup>1</sup> Error message can be queried via communication interface (command: RxxM, see documentation “Communication”)

<sup>2</sup> Error message can be queried via communication interface (command: R00M, see documentation “Communication”)

### 6.3 Status and error codes

LED			Condition	Description
STATUS	TRIGGER	LED-OUT		
Green blinking	Green blinking	Green blinking	ready	no mode was selected yet (mode: NONE)
green	green or blue	ALL	Flash mode active (mode: switch or pulse)	Switch: output during trigger signal active Pulse: output for set duration after trigger edge
green	OFF	ALL	Continuous mode active	set current is permanently driven on output
red	OFF	OFF	Error during initialization	data in flash or EEPROM memory is incorrect
Red blinking	ALL	red	over temperature shutdown	temperature above 80°C after the device is cooled down below 70°C, the last condition will be recovered

## 7 Frequently asked questions

### 1) What to do if I cannot communicate with the LUCON®?

- 1) First, it should be determined whether the communication between the master or com module and the computer works. It is advisable to test this with a read command (e.g. R00F, see chapter 5.4 LUCON®-M commands and chapter 5.5 LUCON®-C commands). If this is successful, please continue with point 3).
- 2) Next it is important to know which interface is used for communication (RS-232 or Ethernet) Check the wiring:
  - a) Use of RS-232
    - i) With RS-232 it is important that the RX line from the LUCON® (pin 10) is connected to the TX line from the computer. The TX line from the LUCON® (pin 9) must be connected to the RX line from the computer. In addition, GND from LUCON® (pin 12) must be connected to the GND of the remote station.
    - ii) If communication is possible in principle, but the displayed characters make no sense, the RS-232 interface is probably incorrectly configured (recommended baud rate: 57600, see Chapter 3.1).
    - iii) If communication is still not possible, briefly disconnect the LUCON® from the power supply and restart.
  - b) Use of Ethernet
    - i) The status LEDs on the RJ45 socket on the LUCON® are used to check whether the cabling is correct. If one LED lights up and the other flashes, the wiring is OK. If neither of the LEDs is lit or both are flashing, there is a problem
    - ii) Correct IP addresses and suitable subnet masks are essential for Ethernet. Both the remote station and the LUCON® must be in the same subnet but must not have the same IP address (e.g. computer IP: 10.0.30.1, subnet: 255.255.255.0 and LUCON®-IP: 10.0. 30.2, subnet: 255.255.255.0). Important! After changing the LUCON® IP address, the device must be re-started.
    - iii) The LUCON® can also be pinged for a simple connection test. If the ping is successful, but communication is still not possible, there is a problem with the stream pools (e.g. the port could be blocked => use a different port).
    - iv) If communication is still not possible, briefly disconnect the LUCON® from the power supply and restart.
- 3) If an error message is issued, it usually helps to restart all devices. To do this, briefly disconnect all connected LUCON® light controllers from the power supply. If an error message continues to appear after a restart, please continue with point 5).
- 4) If, on the other hand, no error message is output, check whether the numbering of the channels is correct (each number is used only once) and whether there is really a channel with the desired number (if necessary, try which channels are connected with R01F, R02F, R03F, ..., R16F) => Correct the channel numbers on the outside of the respective channel.
- 5) If all channel numbers are set correctly and communication is still not possible after restarting all devices, please contact GEFASOFT for further support.

2) Will I damage my LUCON® controller if the output polarity is wrong?

No, the LUCON® LED light controller is not damaged if the polarity of the connected LED light source is inverted. It will even survive a shortcut on the output terminals.

But be aware that ***you might damage your LED light source***, depending on the specific model and output limits set for the LUCON® module.

3) Will I damage my LUCON® controller if my input voltage is wrong?

No, the LUCON® LED light controller comes with an internal protective circuitry that prevents damage to the device if the input voltage supply is inverted or out of spec.

Still, it may require sending the LUCON® to the factory for repair as the protective circuit may blow to prevent serious damage.

4) I don't know my exact LED specs – how to setup the LUCON® parameters?

You do not need to know exact specs of your light source, if you have ball-park numbers for operating current and supply voltage. Just follow the sequence described in section 4.2.

5) Can I drive more than 1,6A on the output side?

The standard LUCON® system is rated for a maximum output current of 1600mA.

As the electronics design and system engineering is developed and owned by GEFASOFT, you may get in touch with our experts to discuss your specific requirements.

We have supplied custom-specific versions of the LUCON® light controller in the past with modified performance specifications, including higher current output in strobe mode.

6) What to do if I cannot communicate with the LUCON® master?

If your serial connection fails to connect to the LUCON® master module, please make sure to check the following:

- 1) Check your wiring of the RS232 interface
- 2) Make sure your COM port selection is correct (also applies if you use of a serial to USB converter)
- 3) Verify the baud rate, 57600 baud it is recommended for connecting to LUCON®

7) LUCON® shows an error during operation

Even without any changes to the parameters, the LUCON® can suddenly fail to drive the adjusted current for the connected light source. This could be due to a too tight setting of the voltage limit (the LED characteristic may change slightly during operation due to thermal effects). Please make sure that you have the voltage limit set to at least 500mV higher than the nominal voltage to allow the driving circuitry to adjust the correct output current. See also section 5.2 Setting the parameters.

## 8 Glossary

<b>TWI</b>	two wire interface – an electronic communication interface between the master and the connected slave modules. The interface is integrated in the backplane that connects between the modules.
<b>nc</b>	not connected – pins are not assigned
<b>Circuit offset</b>	Internal calibration value, required for extended system analysis at the factory.
<b>ADCA Offset</b>	Internal calibration value, required for extended system analysis at the factory.
<b>ADCB Offset</b>	Internal calibration value, required for extended system analysis at the factory.