Quick Reference

Quick Start Guide for LUCON® 2
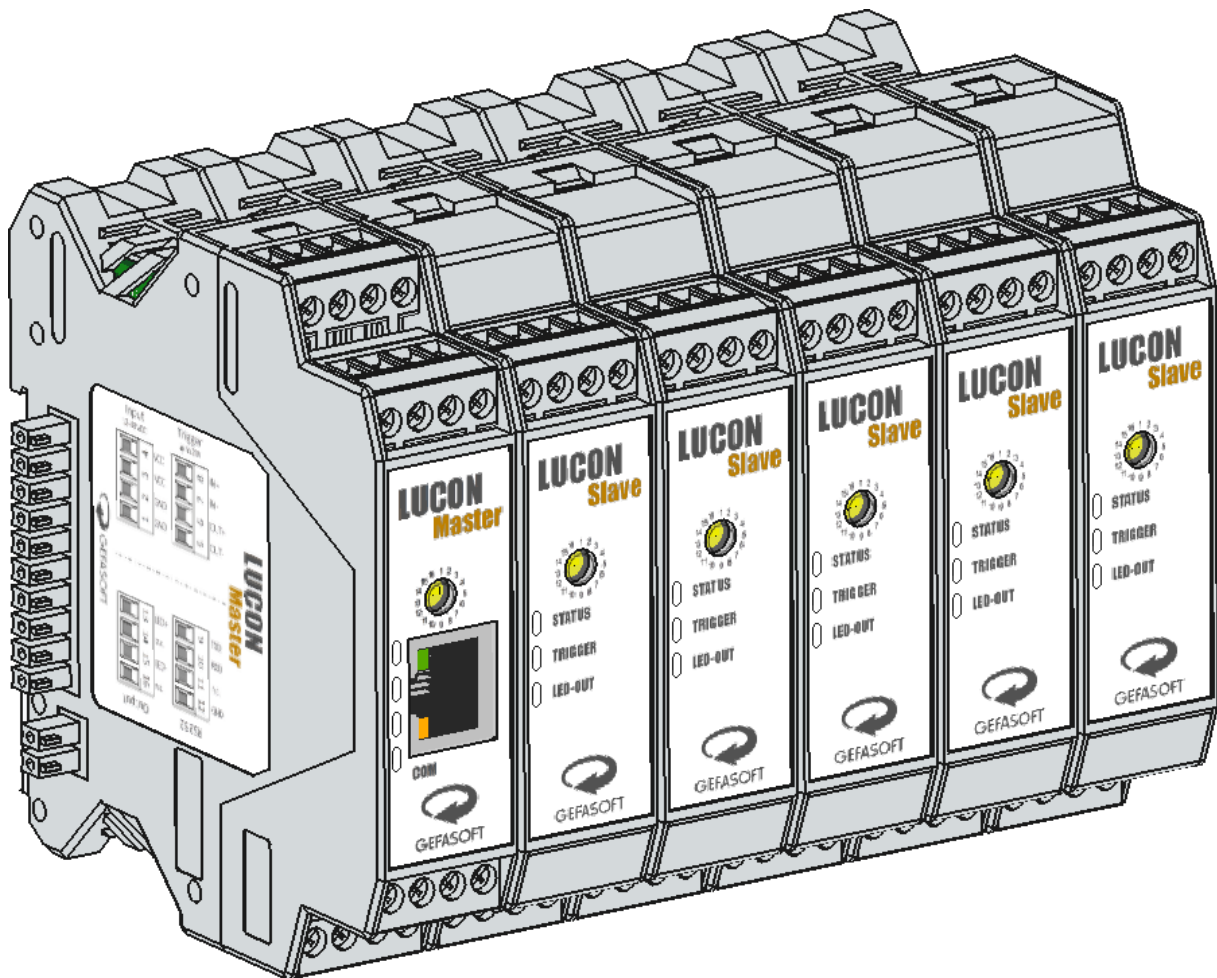
Short description

The LUCON® 2 is a precision light controller with current and voltage control for LED lighting for industrial image processing applications. The lighting can be controlled in both continuous and flash mode. Currents from 1 mA to 20 A are possible.

By regulating current and voltage, a high degree of efficiency and thus lower heat generation is possible.

Identification

Article No.	00039600	LUCON® 2 Master
	00039601	LUCON® 2 Slave

Copyright

MANUFACTURER

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# SERVICE AND SUPPORT

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1 Mounting the LUCON® 2 light controller

Depending on the number of illuminations, connect a LUCON® 2 Master module with a corresponding number of LUCON® 2 Slave modules (max. 15 Slave modules).

Place the LUCON® 2 light controllers individually onto the top-hat rail at an angle from above. Then press lightly against the light controller to snap the mounting clip onto the top-hat rail.
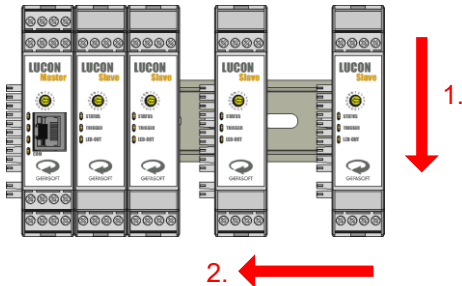
2 Configure channel numbers

Give the LUCON® 2 Master the channel number 1, set the LUCON® 2 Slave modules the numbers 2 to 16 in ascending order.
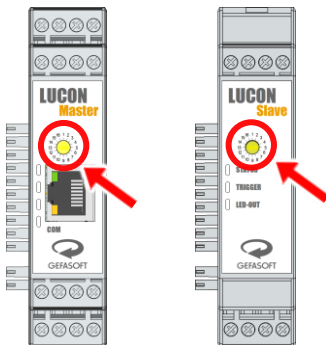

3 Connecting the light controller

When connecting, first connect the lights (terminals 13 and 15), then the trigger (terminals 5, 6, 7 and 8) and communication interfaces (terminals 9, 10 and 12, or RJ45 on the front) and finally the power supply (terminals 1, 2, 3 and 4) to the LUCON® 2 light controllers. For the exact pin assignment, refer to the labelling on the individual modules.

4 Check LEDs

The first LEDs on the LUCON® 2 Master and the LUCON® 2 Slave modules should immediately light up in green. After a few moments, the communication LED on the LUCON® 2 Master also lights up in green or red. The controllers are now ready for configuration.

5 Connecting to the web interface

The LUCON® 2 Master module can be connected to a computer either directly or via a switch. It is important that the IP address of the computer is in the same subnet (e.g. 10.0.30.1, subnet: 255.255.255.0).

IP: 10.0.30.2   **IP: 10.0.30.1**
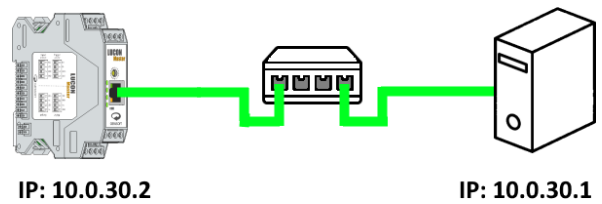
In a browser, enter the address of LUCON® 2 (10.0.30.2) in the address line. The configuration website opens.
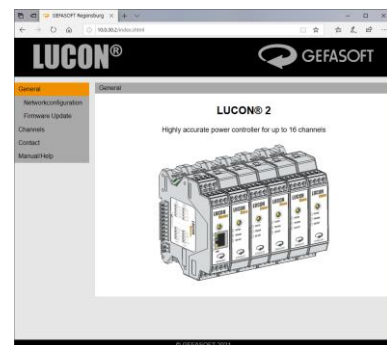
6 Determine lighting parameters

The brightness of an illumination is directly dependent on the current value with which it is controlled. The most important characteristics are the current and voltage limit of the lighting used. This information is usually found directly on the lighting:

However, the max. current is often not specified. This can then be calculated with the power and voltage:

$$I = \frac{P}{U} = \frac{7,68\text{ W}}{24\text{ V}} = 0,32\text{ A} = 320\text{ mA}$$

Too high current can destroy the lighting! On the other hand, a voltage that is set too high on the light controller does not pose a danger to the lighting. Some lights have values for continuous operation and flash operation. If there is no explicit indication, it is usually the current value for continuous operation.

7 Configure limits

In the left menu, select the sub-item "Channels" and then select the desired channel. Then select the item "Configuration" in the upper menu. In the upper area, the values for the current limit in mA and for the voltage limit in mV can now be entered.

ⓘ Current Limit:	320		mA
ⓘ Voltage Limit:	24000		mV

Attention! Do not use the limits for pulse operation in software mode! Software mode is too slow and could permanently damage or destroy the lighting!

8 Test configuration

If the channel is operated in software mode, no external trigger is needed for testing. To do this, click on "Channels" in the menu on the left. Then set the desired current at the corresponding channel (either by direct entry in the text field or using the slider).
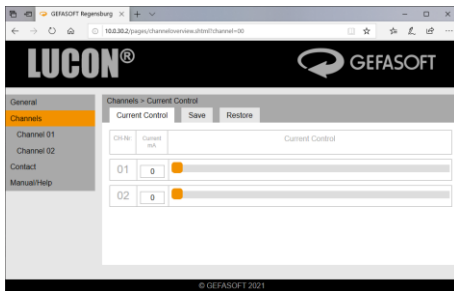

Next, check whether the voltage limit is too low. To do this, leave the current set to the desired value.

9 Check configuration

Not every lighting has exactly the same voltage drop at a given current value. It may well happen that the lighting requires more voltage than specified.

This can be checked by changing to the respective channel in the menu on the left. Now the value for "Voltage over Light" is important. If this value corresponds almost exactly to the set voltage limit and if the value for "Actual Current" is also significantly lower than the "Desired Current", the voltage limit is too low.
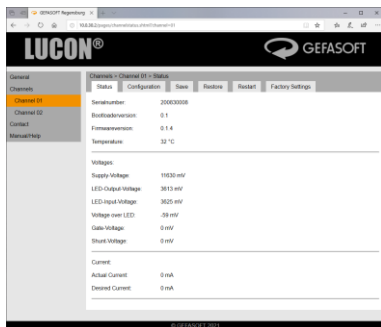
Attention! The value "Actual Current" (measured current flow) is relatively inaccurate! Therefore, do not be irritated if this value deviates significantly from the "Desired Current". The actual current flow is more accurate than the measurement.

10 Adapt configuration

If it turns out that the voltage limit is too low, the limit must be increased. It is recommended to increase the limit in steps of 1000 mV (see step 7). Then test the new value (step 8) and check it (step 9). Repeat the steps until the voltage limit is high enough to reach the desired current value.

If the voltage limit is higher than the supply voltage, the supply voltage is too low. The LUCON® 2 light controller can only convert the voltage downwards. Upward conversion is not possible. In this case, the voltage is too low for the desired operating point of the lighting and a higher supply voltage is necessary.

It is not recommended to operate a lighting system at the voltage limit. Small changes in voltage can result in large changes in brightness.

11 Pulse/Switch-Mode

In pulse and/or switch mode, an external trigger signal is required to switch the output. The respective current is set in the menu item "Configuration".

To verify the set limits, the values "Last Pulse Voltage" (voltage across the lighting at the last pulse), "Last Pulse Current" (current through the lighting at the last pulse) as well as "Desired Pulse Current" and "Desired Switch Current" can be used here. Analogous to the software mode, the measured currents are relatively inaccurate.

Attention! No measurement is possible for pulse lengths below 30 µs!

12 Operation in software mode with commands

The web interface is well suited for configuration. However, it is less suitable for automated control. For this purpose, the LUCON® 2 light controller can be controlled by means of commands. Both RS232 (57600 bps, 8N1) and UDP (port 50 000, see also step 5) can be used as an interface.

The following command is used to activate the regulated current flow:

```
S[Channel-Number]MC|[Current-in-mA]\r\n
```

If channel 1 is to be set to a current of 320 mA, the command looks as follows:

```
S01MC|320\r\n
```

If the current flow is to be switched off again, the following command is required:

```
S01MC|0\r\n
```

13 Parameterisation by means of commands

In addition to configuration via the graphical user interface of the web interface, parameterisation is also possible via the RS232 or UDP interface. This is done by means of command-based communication, which consists of reading (R) and setting (S) commands.

For better clarity, the commands for channel 01 only are listed below. However, the commands apply to all channel numbers from 01 - 16.

Description	SET	READ	Example
Current Limit (in mA)	S01L|[Current-Limit-in-mA]\r\n	R01L\r\n	S01L|320\r\n
Voltage Limit (in mV)	S01L|[Voltage-Limit-in-mV]\r\n	R01V\r\n	S01V|25000\r\n
Current supply voltage (in mV)	-	R01USU\r\n	-
Activate current flow in software mode ("Desired Current", in mA)	S01MC|[Current-in-mA]\r\n	-	S01MC|100\r\n
Deactivate current flow in software mode	S01MC|0\r\n	-	S01MC|0\r\n
Desired current flow in software mode (in mA)	-	R01CD\r\n	-
Measured[1] current flow in software mode ("Actual Current", in mA)	-	R01CA\r\n	-
Current voltage over lighting in software mode ("Voltage over Light", in mV)	-	R01UL\r\n	-
Activate switch mode (Current in mA)	S01MT|[Current-in-mA]\r\n	-	S01MT|150\r\n
Desired current in switch mode (in mA)	S01SC|[Current -in-mA]\r\n	R01SC\r\n	S01SC|100\r\n
Activate pulse mode (Current in mA, Delay in µs, Duration in µs)	S01MDU|[Current]|[Delay]|[Duration]\r\n	-	S01MDU|100|20|100\r\n
Desired current in pulse mode (in mA)	S01PC|[Current-in-mA]\r\n	R01PC	S01PC|1500\r\n
Measured[1] current through illumination from last pulse ("Last Pulse Current", in mA, applies to switch and pulse mode)	-	R01LPC\r\n	R01LPC\r\n
Measured voltage over illumination from the last pulse ("Last Pulse Voltage", in mV, applies to switch and pulse mode)	-	R01LPV\r\n	R01LPV\r\n
Activate "None" mode (output is deactivated)	S01MN\r\n	-	S01MN\r\n
Input trigger polarity in switch mode (0 = output active when trigger low, 1 = output active when trigger high)	S01ST|[Polarity]\r\n	R01ST\r\n	S01ST|0\r\n S01ST|1\r\n
Input trigger polarity in pulse mode (0 = pulse when trigger rises, 1 = pulse when trigger falls, 2 = pulse when trigger rises or falls).	S01I|[Polarity]\r\n	R01I\r\n	S01I|0\r\n S01I|1\r\n

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[1]   **Attention!** The measured current flow is relatively inaccurate! Therefore, do not be irritated if this value deviates significantly from the desired current. The actual current flow is more accurate than the measurement.