

## LED 4-channel dimmer

The LCN-HL4 LED-dimmer operates on the I-Port of an LCN-module with firmware 170212 (Feb. 2013) or later.

The dimmer is specified for simple and flexible controlling of LED's with constant voltage (generally LED-stripes).

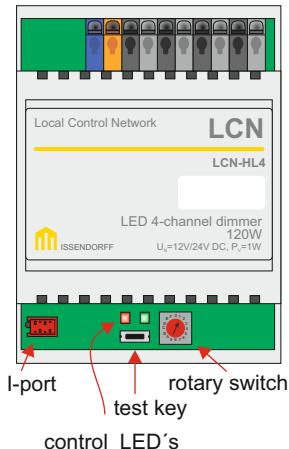
**Note:** An additional 12/24V DC power supply (with over-load protection) is required!

## Scope of delivery

LCN-HL4 & I-port connecting cable.

## Function

The LCN-HL4 can be connected to all intelligent LCN-modules - preferably there, where the outputs are not being used elsewhere, e.g. on the LCN-SHS. It transfers the brightness values of the (virtual) electronic outputs 1-4 to the LCN-HL4 over the I-port, as soon as the function „Dimmer via I-Port“ is active. The LCN-HL4 converts these values into a PWM-signal for the LED's.

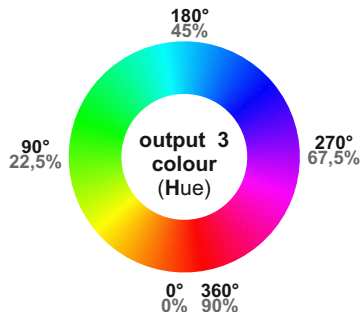


### RGB colour model (switch position 2)

The outputs will be transferred 1:1 to RGB. Output 1 controls **red**, output 2 controls **green**, output 3 controls **blue** and output 4 the **white** LED. Although it is not simple to set the brightness of a particular colour: All four colours must be dimmed in a constant mix ratio, to avoid changing the luminous colour. This can be done easier in the HSB colour model:

### HSB colour model (switch position 1)

The required functions are reached through the settings **colour** (Hue), the **repletion** (Saturation) and the **luminance** (Brightness).



Output 1 = brightness (dimming from dark to a colour)

Output 2 = saturation (dimming from white to a colour)

Output 3 = colour (0-100% provides all colours)

Output 4 = white

The colour can be presented as a full colour (Red, Green or Blue) with 100% saturation, or with less saturation (e.g. 50%) as pink, mint green or light blue. With a saturation of 0%, only white can be seen.

Additionally a brightness can be set irrespectively to the map colours. The colour should not change. Otherwise you should check if the colour of the LED's are allocated to the proper channels.

When the output 1 (brightness) is addressed, the value 0% switched off LED's is provided and the value 100% for fully switched on LED's. Irrespectively to a saturation or colour. That is the classical dimming.

When the output 2 (saturation) is addressed, the value 0% provides the colour white and the value 100% the chosen full colour or its mix.

When the output 3 (colour) is addressed, the value 0% provides= Red, the value 33% = Green, the value 66% = Blue and the value 100% red again, because it's dealing with a chromatic circle, (just as a compass, when „0" and „360" degrees show the same direction)

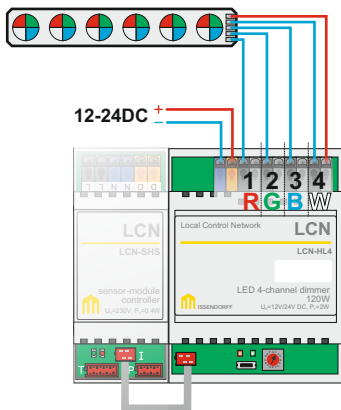
The output 4 (white) is independant and can be used for general dimming, e.g. additional white light (RGBW).

### Rotary switch

<b>switch position 0</b>	→ all outputs <b>OFF</b>
<b>switch position F</b>	→ all outputs <b>100 %</b>
<b>switch position 1</b>	→ <b>HSB-colour model</b> : output 1 = brightness, output 2 = saturation, output 3 = colour and output 4 = white.
<b>switch position 2</b>	→ <b>1:1 conversion 0-100%</b> (channel x = output x)
<b>switch position 3</b>	→ like 1 however all channels only give out R
<b>switch position 4</b>	→ like 1 however all channels only give out G
<b>switch position 5</b>	→ like 1 however all channels only give out B
<b>switch position 6</b>	→ like 2 however all channels only give out W
<b>switch position 7</b>	→ like 2 however all channels only give out R
<b>switch position 8</b>	→ like 2 however all channels only give out G
<b>switch position 9</b>	→ like 2 however all channels only give out B
<b>switch position A</b>	→ like 2 however all channels only give out W
<b>switch position B-E</b>	→ without function

**Important:** Do not operate LCN-GT4D/-GT10D/-GFPS/-ULT on the I-port at the same time or with ECG-interface DALI/DSI signals - when dimming the brightness/colour could jump!

## Connection example



## Power supply

The connected power supply must offer pulse resistance, voltage stability and a load reserve of 30%. The voltage has to be chosen, so that it has the same voltage as the connected LED's. The power supply should have an overload protection.

## Load

The 4 channels can be loaded up to 5A as a sum or just as one-channel (monochrome).

## Cable length /cross section (standard values)

120W → max. 20m → min. 2,5mm<sup>2</sup>

120W → max. 10m → min. 1,5mm<sup>2</sup>

**Note:** It is necessary to check which line voltage-drop can be tolerated at the end of the cable.

### Setting up for operation

With the LCN-PRO version 5.x, activate under „3-Ports“ the setting „Dimming via I-Port“.

### Test key

When the LCN-HL4 not connected to the I-port of an LCN-module, every output can be controlled one after another by pressing the test key. This brings the single colours, coloured mixtures and white to the outputs respectively.

When the I-port is connected to the LCN-module, the green LED blinks and the red one goes off. Now a colour setting can only be carried out per LCN command, by setting the outputs of the module.

### Status LED's

<b>green</b>	ON	= No connection to the I-port, „ <i>dimmer on the I-Port</i> “ not active
<b>green</b>	BLINKS	= <b>Normal operation</b> (switch position 1-9 & A, F)
<b>green</b>	FLICKERS	= Test operation (switch position F & 0)
<b>green</b>	GLIMMERS	= Test operation without conn. to I-Port / „ <i>dimmer on the I-Port</i> “ not active (switch pos. F & 0)
<b>red</b>	OFF	= <b>Normal operation</b> (switch position 1-9 & A-E)
<b>red</b>	BLINKS	= No connection to the I-Port and / or „ <i>dimmer on the I-Port</i> “ not active

**Technical data****Input**

input voltage:	12-24V DC (use power supply with overload protection)
power loss:	<1W
output power:	120W (with 24V DC)
terminals/wire type (output):	screwless, solid max. 2,5mm <sup>2</sup> or fine wire with wire end-sleeves max 1,5mm <sup>2</sup>

LCN-connection:	I-connection port, electrically isolated from the load side, I-port cable length 300mm (pluggable), over LCN-IVH extendable up to a maximum of 50m.,
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**output**

output voltage:	constant voltage, dimming over PWM-signal 200Hz
output current sum:	5A,
output current per channel:	1,25A or one-channel 5A

### Technical data

#### Installation

operating temperature:	-10°C bis +40°C
air humidity:	max. 80% rel., non condensing
protection art:	IP20
environmental conditions:	use as stationary installation according to VDE632,VDE637
dimensions/installation:	68mm (4HP) x 92mm x 66,5mm for installing on DIN-rail 35mm (DIN50022)

Technical information and images are non binding. Changes are reserved.

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