



SMARTEH[®]
LIVING SYSTEMS

USER MANUAL

- ▶ Longo programmable controller
LPC-2.DD4
4 Channel Triac Dimmer module

Version 1

Written by SMARTEH d.o.o.
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User Manual

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STANDARDS AND PROVISIONS: Standards, recommendations, regulations and provisions of the country in which the devices will operate, must be considered while planning and setting up electrical devices. Work on 100 .. 240 V AC network is allowed for authorized personnel only.

DANGER WARNINGS: Devices or modules must be protected from moisture, dirt and damage during transport, storing and operation.

WARRANTY CONDITIONS: For all modules LONGO LPC-2 - if no modifications are performed upon and are correctly connected by authorized personnel - in consideration of maximum allowed connecting power, warranty of 24 months is valid from the date of sale to the end buyer, but not more than 36 months after delivery from Smarteh. In case of claims within warranty time, which are based on material malfunctions the producer offers free replacement. The method of return of malfunctioned module, together with description, can be arranged with our authorized representative. Warranty does not include damage due to transport or because of unconsidered corresponding regulations of the country, where the module is installed.

This device must be connected properly by the provided connection scheme in this manual. Misconnections may result in device damage, fire or personal injury.

Hazardous voltage in the device can cause electric shock and may result in personal injury or death.

NEVER SERVICE THIS PRODUCT YOURSELF!

This device must not be installed in the systems critical for life (e.g. medical devices, aircrafts, etc.).

If the device is used in a manner not specified by the manufacturer, the degree of protection provided by the equipment may be impaired.

Waste electrical and electronic equipment (WEEE) must be collected separately!

LONGO LPC-2 complies to the following standards:

- EMC: EN 61000-6-3:2007 + A1:2011, EN 61000-6-1:2007, EN 61000-3-2:2006 + A1:2009 + A2: 2009, EN 61000-3-3:2013
- LVD: IEC 61010-1:2010 (3rd Ed.), IEC 61010-2-201:2013 (1st Ed.)

Smarteh d.o.o. operates a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without any prior notice.

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Longo programmable controller LPC-2.DD4

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1 ABBREVIATIONS

LED Light emitting diode



2 DESCRIPTION

LPC-2.DD4 module is a 4 channel triac current drive intended for dimmable lights with sum load current up to 6.1 A which can be freely divided between all 4 channels e.g. user can consume all 6.1 A on one channel or 1.5 A on each of 4 channels. Module is not suitable for use with fluorescent tubes.

Module can also be used for driving motors. It is an excellent replacement for traditional relay fan speed regulation. Using LPC-2.DD4 module step-less fan speed regulation is achieved.

LEDs indicate state of signal present on corresponding module output. Their brightness corresponds to the output setting.

LPC-2.DD4 is controlled and powered from the main module (e.g., LPC-2.MC8, LPC-2.MC9) via Right internal bus.



3 FEATURES

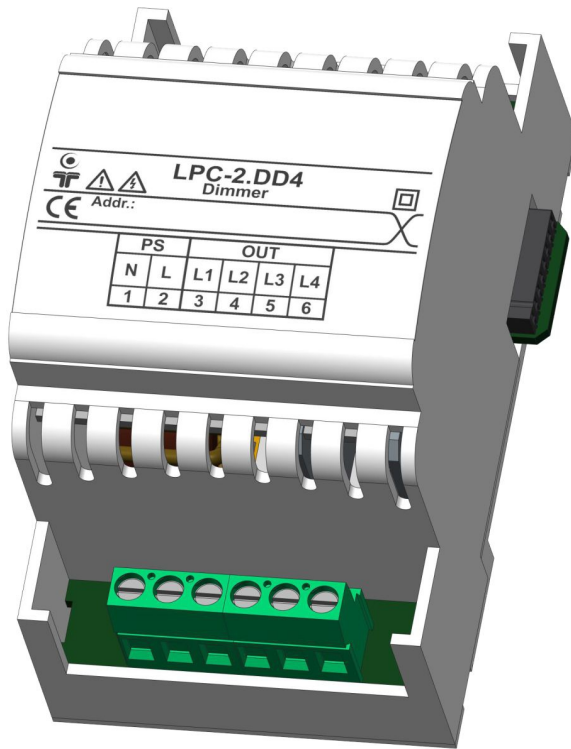


Figure 1: LPC-2.DD4 module

Table 1: Features

4 channel triac current drive for dimmable lights or motor drives
Operational power supply 100 .. 253 V AC, 50/60 Hz
Sum load current 6.1 A which can be freely divided between all 4 channels.
Soft transition (fade effect) between various output settings for chopping sine wave
Turn off with or without fade-out effect
Phase dependent driver for output which makes this module a lot more resistant to electrical disturbances than commonly used amplitude dependent drivers
Standard DIN EN50022-35 rail mounting



4 OPERATION

Module parameters can be read or written via Smarteh IDE software.

4.1 Parameters

If parameter is set to logical “1”, is considered to be active, enabled or set. If parameter has logical value “0” is considered to be inactive, disabled or cleared.

Parameter can be a output, input, status or setting. Output and input parameters corresponds to the physical output and input pins of the module. Status parameters are used for additional information from the module, where setting parameters are used to select different settings on the module.

Output:

L1 - Dimmer output [OUT1]: Output setting

Type: WORD

Raw to engineering data: 500 .. 10000 → 5.00 .. 100.00%
 11 .. 499 → Output off with fade-out effect
 0 .. 10 → Immediate output off

L2 - Dimmer output [OUT2]: Output setting

Type: WORD

Raw to engineering data: 500 .. 10000 → 5.00 .. 100.00%
 11 .. 499 → Output off with fade-out effect
 0 .. 10 → Immediate output off

L3 - Dimmer output [OUT3]: Output setting

Type: WORD

Raw to engineering data: 500 .. 10000 → 5.00 .. 100.00%
 11 .. 499 → Output off with fade-out effect
 0 .. 10 → Immediate output off

L4 - Dimmer output [OUT4]: Output setting

Type: WORD

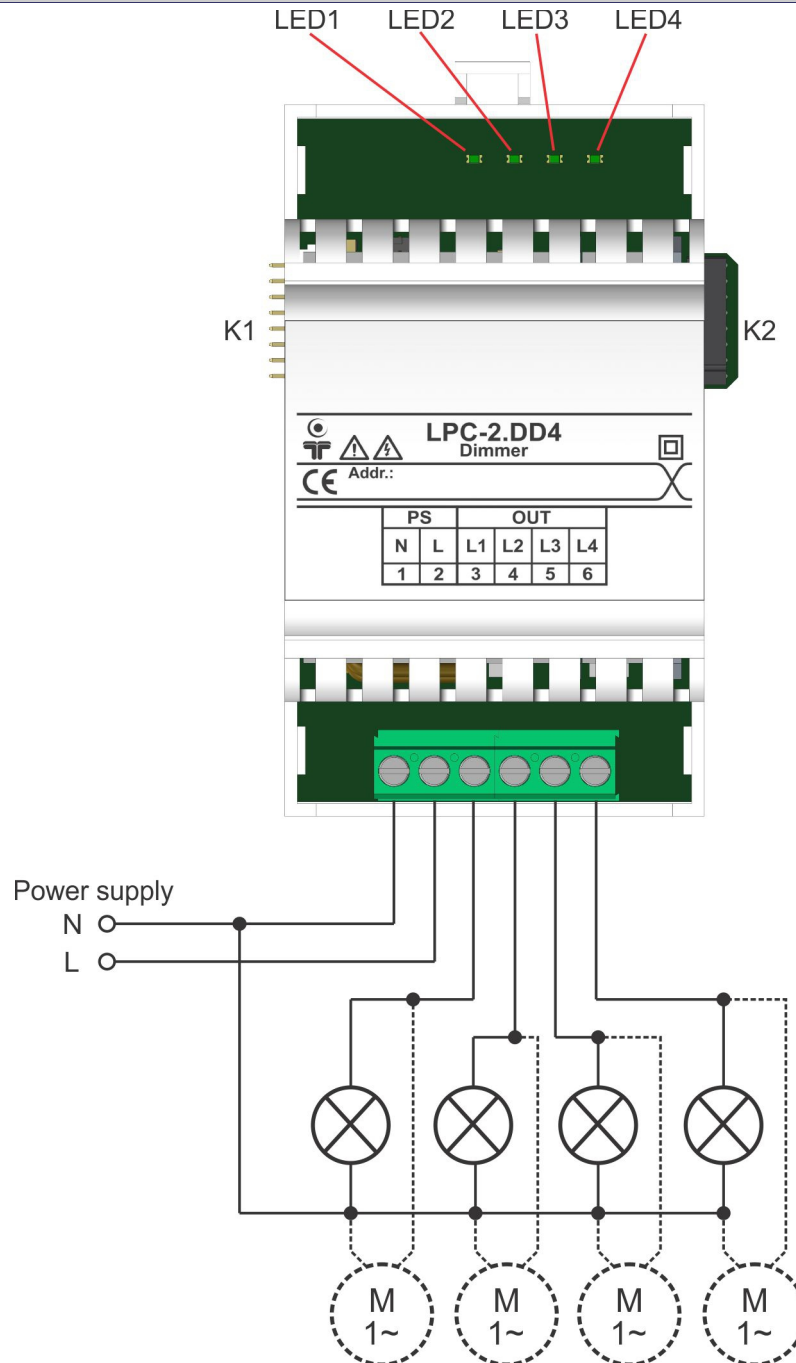
Raw to engineering data: 500 .. 10000 → 5.00 .. 100.00%
 11 .. 499 → Output off with fade-out effect
 0 .. 10 → Immediate output off



5 INSTALLATION

5.1 Connection scheme

Figure 2: Connection scheme¹



¹ Outputs must not be connected together.



Table 2: PS

PS.1	N	Power supply - neutral
PS.2	L	Power supply - line - 100 .. 253 V AC, 50/60 Hz

Table 3: OUT

OUT.3	L1	Triac dimmer output
OUT.4	L2	Triac dimmer output
OUT.5	L3	Triac dimmer output
OUT.6	L4	Triac dimmer output

Table 4: K1

Internal BUS	Data & DC power supply	Connection to I/O module
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Table 5: K2

Internal BUS	Data & DC power supply	Connection to I/O module
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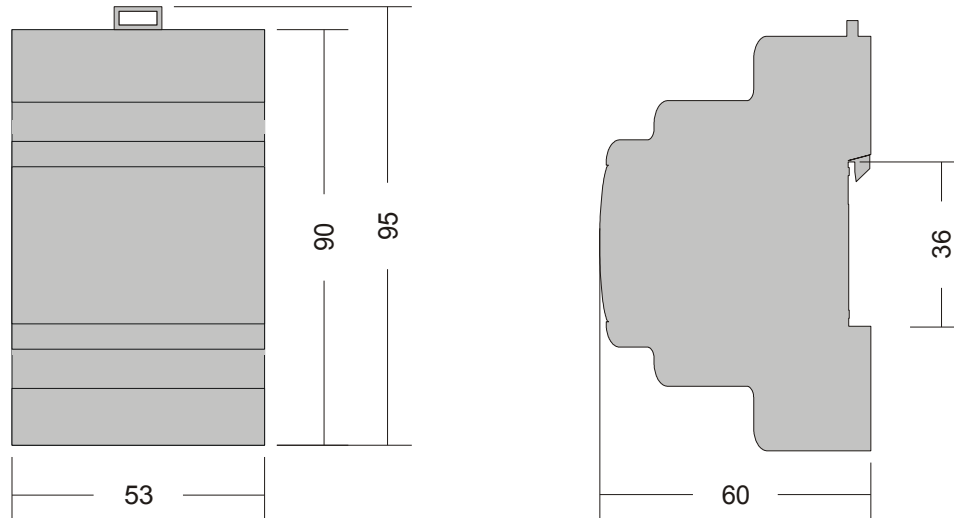
Table 6: LEDs

LED1: green	Triac dimmer output state	ON (gradually): L1 output on (conductive) OFF: output not powered
LED2: green	Triac dimmer output state	ON (gradually): L2 output on (conductive) OFF: output not powered
LED3: green	Triac dimmer output state	ON (gradually): L3 output on (conductive) OFF: output not powered
LED4: green	Triac dimmer output state	ON (gradually): L4 output on (conductive) OFF: output not powered



5.2 Mounting instructions

Figure 3: Housing dimensions



Dimensions in millimeters.



All connections, module attachments and assembling must be done while module is not connected to the power supply.

Mounting instructions:

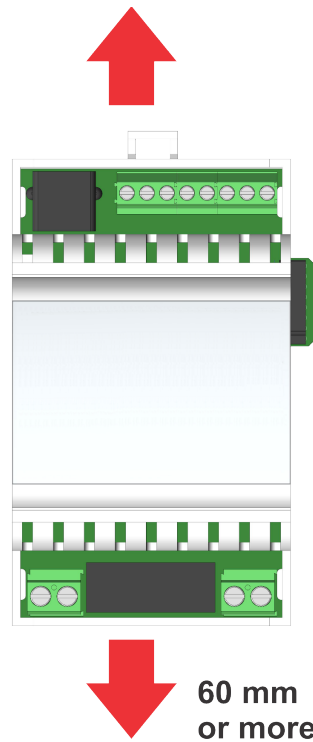
1. Switch off main power supply.
2. Mount LPC-2.DD4 module to the provided place inside an electrical panel (DIN EN50022-35 rail mounting).
3. Mount other LPC-2 modules (if required). Mount each module to the DIN rail first, then attach modules together through K1 and K2 connectors.
4. Connect digital inputs and outputs wires according to the connection scheme in Figure 2.
5. Switch on main power supply.

Dismount in reverse order. For mounting/dismounting modules to/from DIN rail a free space of at least one module must be left on the DIN rail.

NOTE: LPC-2 main module should be powered separately from other electrical appliance connected to LPC-2 system. Signal wires must be installed separately from power and high voltage wires in accordance with general industry electrical installation standard.



Figure 4: Minimum clearances



The clearances above must be considered before module mounting.



5.3 Module labeling

Figure 5: Labels

Label 1 (sample):

LPC-2.DD4
P/N:225DD417001001
D/C: 01/17

Label 2 (sample):

S/N: DD4-S9-170000002

Label 1 description:

1. **LPC-2.DD4** is the full product name.
2. **P/N:225DD417001001** is the part number.
 - **225** - general code for product family,
 - **DD4** - short product name,
 - **17001** - sequence code,
 - **17** - year of code opening,
 - **001** - derivation code,
 - **001** - version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C:17/01** is the date code.
 - **17** - week and
 - **01** - year of production.

Label 2 description:

1. **S/N:DD4-S9-1700000002** is the serial number.
 - **DD4** - short product name,
 - **S9** - user code (test procedure, e.g. Smarteh person xxx),
 - **17000000002** - year and current stack code,
 - **17** - year,
 - **00000002** - current stack number; previous module would have the stack number 00000001 and the next one 00000003.



6 TECHNICAL SPECIFICATIONS

Table 7: Technical specifications

Power supply	from internal BUS
Power consumption	1 W
Rated load voltage	100 .. 253 V AC, 50/60 Hz
Rated load current per channel	0.05 .. 6.1 A
Sum load current of all 4 channels	max. 6.1 A
Number of drive outputs	4
Fuse	no
Connection type	screw type connectors for stranded wire 0.75 to 2.5 mm ²
Dimensions (L x W x H)	90 x 53 x 60 mm
Weight	70 g
Ambient temperature	0 to 50 °C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 °C
Pollution degree	2
Overvoltage category	II
Electrical equipment	Class II (double insulation)
Protection class	IP 30



7 SPARE PARTS

For ordering spare parts following Part Numbers should be used:

LPC-2.DD4 module, 4 channel triac current drive	
LPC-2.DD4	P/N: 225DD417001001

Interconnection cable	
ICM-x	P/N: 203ICMxxxxxxxx



8 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
30.05.17	1	The initial version, issued as <i>LPC-2.DD4 module UserManual</i> .





9 NOTES

