SMARTEH LIVING SYSTEMS

LPC-2.DX1 Longo Programmable Controller

SMARTEH LPC-2.DX1 Longo Programmable Controller User Manual

Contents

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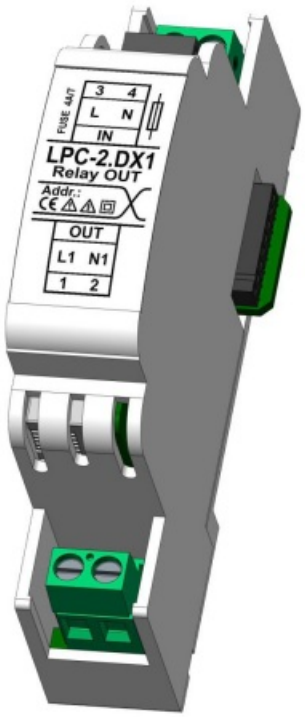

Specifications

- Product Name: Longo Programmable Controller LPC-2.DX1 Relay Module
- Version: 2
- Manufacturer: SMARTEH d.o.o.
- Operating Voltage: 100 – 240 V AC
- Output: Relay digital output with make contacts (NO)
- Features: Inrush current protection, galvanic isolated output, LED signal indicator, fuse status detection
- Mounting: Standard DIN EN50022-35 rail mounting

FAQ

Q: Can the LPC-2.DX1 module be used with both inductive and capacitive loads?

A: Yes, the LPC-2.DX1 module is suitable for use with both inductive and capacitive loads such as reflectors, contractors, and motors.

Q: How is the LPC-2.DX1 module powered?

A: The LPC-2.DX1 module is powered from the main module (e.g., LPC-2.MU1, LPC-2.MC9) via the Right internal bus.

Q: What type of mounting does the LPC-2.DX1 module support?

A: The LPC-2.DX1 module supports standard DIN EN50022-35 rail mounting for easy installation.

Written by SMARTEH d.o.o.

User Manual
Document Version: 2
May, 2024

WARNING

- 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.

MANUFACTURER:
SMARTEH d.o.o.
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5220 Tolmin
Slovenia

ABBREVIATIONS

- **DC** Direct Current
- **AC** Alternating Current
- **RX** Receive
- **TX** Transmit
- **UART** Universal Asynchronous Receiver-Transmitter
- **NO** Normally Open
- **PLC** Programmable Logic Controller

DESCRIPTION

LPC-2.DX1 is a relay output module with inrush current protection and galvanic isolated output. It can be used in a wide range of operation. It is suitable to be used with inductive or capacitive loads (e.g. reflectors, contractors, motors).
LED indicates active signal present on module output and fuse status.
LPC-2.DX1 is controlled and powered from the main module (e.g. LPC-2.MU1, LPC-2.MC9, …) via Right internal bus.

FEATURES

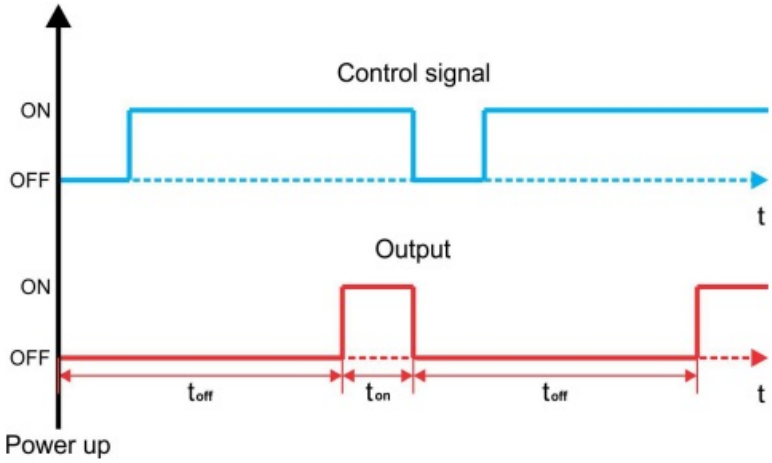
Table 1: Technical data

- Relay digital output with make contacts (NO), inrush current limited, galvanic isolated
- Signal LED
- Blown fuse detection
- Supplied from main module
- Small dimensions and standard DIN EN50022-35 rail mounting

OPERATION

- LPC-2.DX1 module can be controlled from main PLC module (e.g. LPC-2.MC9, LPC-2.MM1). Module parameters can be read or written via Smarteh IDE software.
- LPC-2.DX1 module can also be controlled by the remote input output main module (e.g. LPC-2.MU1).
- WARNING: Upon activation of the output, current flows through the NTC thermistor, limiting inrush current. Consequently, the NTC thermistor heats up during output activation. To ensure reliable operation, the time between output cycles must be sufficient to allow the NTC thermistor to cool down completely.
- The software-defined minimum time delay between output deactivation and reactivation is set to 20 seconds. However, this timeout value is not intended to be the maximum limit. It serves as a reminder to consider the cooling requirements of the NTC thermistor when designing the operational cycle of your application.
- Refer to the included time graph for a visual representation of the output ON delay (toff) after device power up and the ON delay (toff) between output cycles.
- In case the temperature measured by the measuring NTC thermistor exceeds 80°C, the output will be deactivated.

Figure 2: Output ON-delay



SmartehIDE Parameters

Input

Internal temperature [DX1_x_ai_internal_temp]: Internal temperature measurement on the PCB.

Type: UINT

Raw to engineering data: 0 .. 65535 → 0 .. 655.35 °C

Fuse status [DX1_x di_fuse_status]: Fuse digital input status.

Type: BOOL

- 0 → Fuse blown
- 1 → Fuse OK

Output

Relay digital output [DX1_x_do_out]: Relay digital output status.

Type: BOOL

Raw to engineering data:

- 0 → Digital output OFF
- 1 → Digital output ON

INSTALLATION

Connection scheme

Figure 3: Connection scheme

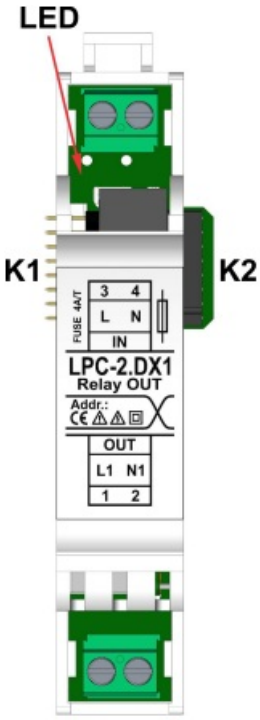


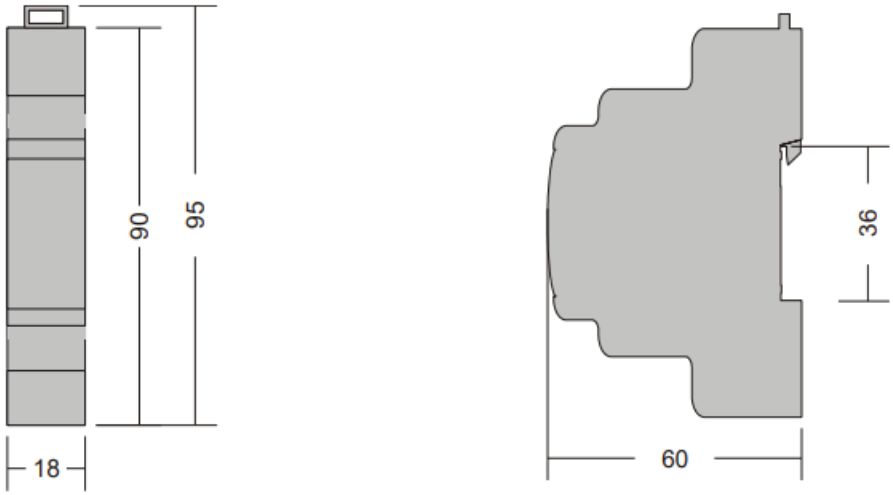
Table 2: IN

IN.3	L	Power supply input – line, 100 .. 240 V AC, 50/60 Hz
IN.4	N	Power supply input – neutral, 100 .. 240 V AC, 50/60 Hz
Table 3: OUT		
OUT.1	L1	Power supply output – line, 100 .. 240 V AC, 50/60 Hz
OUT.2	N1	Power supply output – neutral, 100 .. 240 V AC, 50/60 Hz
Table 4: Fuse		
Fuse	4A (T-slow)	Cartridge fuse 5×20 mm
Table 5: LED		
LED: green	Status LED	ON: Output switched ON and power on output OFF: Output switched OFF and no power on output Blinking: No power on output, fuse blown or no voltage on input

Table 6: K1		
Internal BUS	Data & DC power supply	Connection to I/O module
Table 7: K2		
Internal BUS	Data & DC power supply	Connection to I/O module

Mounting instructions

Figure 4: Housing dimensions



Dimensions in millimeters.

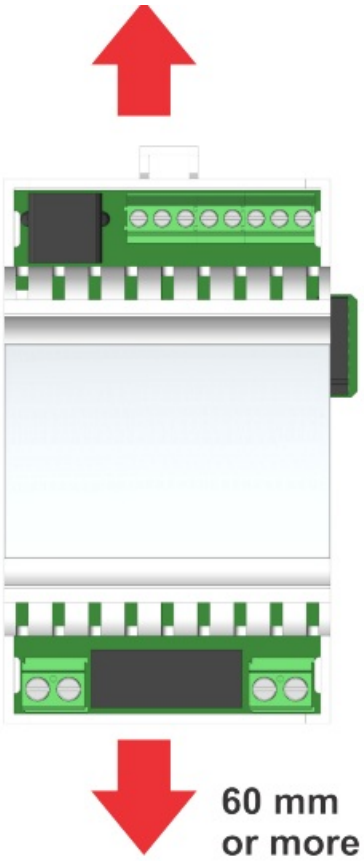
All connections, module attachments and assembling must be done while module is not connected to the main power supply.

Mounting instructions:

1. Switch OFF main power supply.
2. Mount LPC-2.DX1 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 input and output wires according to the connection scheme in Figure 2.
5. Switch ON main power supply.

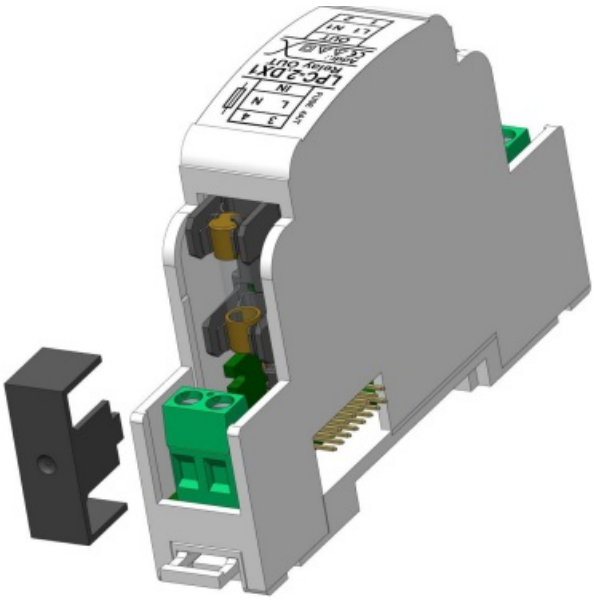
Dismount in reverse order. For mounting/dismounting modules to/from DIN rail a free space of at least one module must be left on the DIN rail.
NOTE: LPC-2 main module should be powered separately from other electrical appliance connected to LPC-2 system. Signal wires must be installed separately from power and high voltage wires in accordance with general industry electrical installation standard.

Figure 5: Minimum clearances



The clearances above must be considered before module mounting.

Figure 6: Fuse replacement



TECHNICAL SPECIFICATIONS

- Power supply From the main module via internal bus
- Max. power consumption 0.5 W
- Rated input voltage 100 .. 240 V AC, 50/60 Hz
- Maximum operating current 4 A
- SW-defined minimum OFF time1 20 s

- Fuse 4 A (T-slow), 250 V, Cartridge fuse 5×20 mm
- Connection type screw type connectors for stranded wire 0.75 to 2.5 mm2
- Dimensions (L x W x H) 90 x 18 x 60 mm
- Weight 70 g
- Ambient temperature 0 to 50 °C
- Ambient humidity max. 95 %, no condensation
- Maximum altitude 2000 m
- Mounting position vertical
- Transport and storage temperature -20 to 60 °C
- Pollution degree 2
- Overvoltage category II
- Electrical equipment Class II (double insulation)
- Protection class IP 30

MODULE LABELING

Label (sample):

XXX-N.ZZZ
P/N: AAABBBCCDDDEEE
S/N: SSS-RR-YYXXXXXXXXX
D/C: WW/YY

Label description:

1. XXX-N.ZZZ – full product name.
    - XXX-N – Product family
    - ZZZ – product
2. P/N: AAABBBCCDDDEEE – part number.
    - AAA – general code for product family,
    - BBB – short product name,
    - CCDDD – sequence code,
    - CC – year of code opening,
    - DDD – derivation code,
    - EEE – version code (reserved for future HW and/or SW firmware upgrades).
3. S/N: SSS-RR-YYXXXXXXXXX – serial number.
    - SSS – short product name,
    - RR – user code (test procedure, e.g. Smarteh person xxx),
    - YY – year,
        - XXXXXXXXX – current stack number.
4. D/C: WW/YY – date code.
    - WW – week and
    - YY – year of production.

Optional

1. MAC
2. Symbols
3. WAMP
4. Other

CHANGES

The following table describes all the changes to the document.

Date	V.	Description
10.05.24	1	The initial version, issued as *LPC-2.DX1 module UserManual*.

Documents / Resources

	SMARTEH LPC-2.DX1 Longo Programmable Controller [pdf] User Manual LPC-2.DX1 Longo Programmable Controller, LPC-2.DX1, Longo Programmable Controller, Programmable Controller, Controller

References

- User Manual