USER MANUAL

Longo programmable controller
LPC-2.CT1
Main Relay module

Version 1

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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.CT1

1 ABBREVIATIONS

Sorted by order of appeareance in document:

HVAC	Heating, ventilation and air conditioning
LED	Light emitting diode
DIP	Dual in-line package
RFID	Radio frequency identification

2 DESCRIPTION

LPC-2.CT1 (Main Relay module) is used for controlling two rooms or one room with HVAC control in an energy saving manner. Controlling mode is selected with DIP switch on the module.

In case the module is set for controlling 2 rooms, it uses 2 relay 16 A outputs for main power and 4 relay 1 A outputs for signaling “ROOM SERVICE” and “DO NOT DISTURB” for each of the two rooms.

If the module is set for controlling one room with HVAC, it uses 2 relay 16 A outputs for powering the room and HVAC, 2 relay 1 A outputs for signaling “ROOM SERVICE” and “DO NOT DISTURB” of the room and 2 inputs for switches (doors, windows, …) for HVAC control.

3 FEATURES

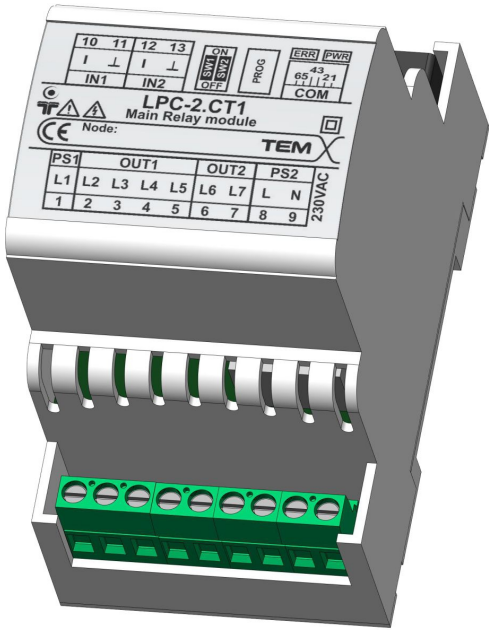


Figure 1: LPC-2.CT1 module.

Table 1: Features
4 relay output with make contacts (NO), 1 A per relay
2 relay output with make contacts (NO), 16 A per relay
2 digital inputs, pull-up configuration
Energy saver controller for 2 rooms or 1 room + HVAC control
Standard DIN EN50022-35 rail mounting
RS-485 connectivity for card holder module
2 diagnose LEDs

4 OPERATION

1 room with HVAC control

For connection scheme of the LPC-2.CT1 module see Figure 2.

Room power and HVAC power is switched ON immediately after inserting the correct RFID card type into Card Holder. The correct RFID card is signalized with 2 seconds beep and green LED on the Card Holder. Once the card is inserted, “ROOM SERVICE” and “DO NOT DISTURB” buttons on the Card Holder are active. “ROOM SERVICE” and “DO NOT DISTURB” relays are switched immediately after pressing the button on Card Holder. ON state of the “ROOM SERVICE” and “DO NOT DISTURB” outputs are signalized with blue LED next to the button. HVAC is turned OFF after 1 minute in case balcony switch or window switch is in open state or RFID card is removed. Room power is turned OFF 20 seconds after card is removed. “DO NOT DISTURB” output is turned OFF once the RFID card is removed, while “ROOM SERVICE” output stays in the state that it was before RFID card was removed.

Switch SW1

DIP switch on the LPC-2.CT1 must be in Off position.

Card holder

For Emarine type RFID cards, LPC-2.CH1 Card Holder module must be used.

For Mifare type RFID cards, LPC-2.CH1M Card Holder module must be used.

Address of the holder must be 0, which is selected with the DIP switches on board Card Holder – see Card Holder manual.

2 rooms control

For connection scheme of the LPC-2.CT1 module see Figure 3.

Room power of each room is switched ON immediately after inserting the correct RFID card type into belonging Card Holder. The correct RFID card is signalized with 2 seconds beep and green LED on the Card Holder. Once the card is inserted, “ROOM SERVICE” and “DO NOT DISTURB” buttons on the Card Holder are active. “ROOM SERVICE” and “DO NOT DISTURB” relays are switched immediately after pressing the button on Card Holder. ON state of the “ROOM SERVICE” and “DO NOT DISTURB” outputs are signalized with blue LED next to the button. Room power is turned OFF 20 seconds after card is removed. “DO NOT DISTURB” output is turned OFF immediately after the RFID card is removed, while “ROOM SERVICE” output stays in the state that it was before RFID card was removed.

Switch SW1

DIP switch on the LPC-2.CT1 must be in On position.

Card holder

For Emarine type RFID cards, LPC-2.CH1 Card Holder module must be used.

For Mifare type RFID cards, LPC-2.CH1M Card Holder module must be used.

Address of the Card Holder for room 1 must be 0 and address of the Card Holder for room 2 must be 1, which is selected with the DIP switches on board Card Holder – see Card Holder manual.

5 INSTALLATION

5.1 Connection scheme

Figure 2: Connection scheme for controlling one room with HVAC

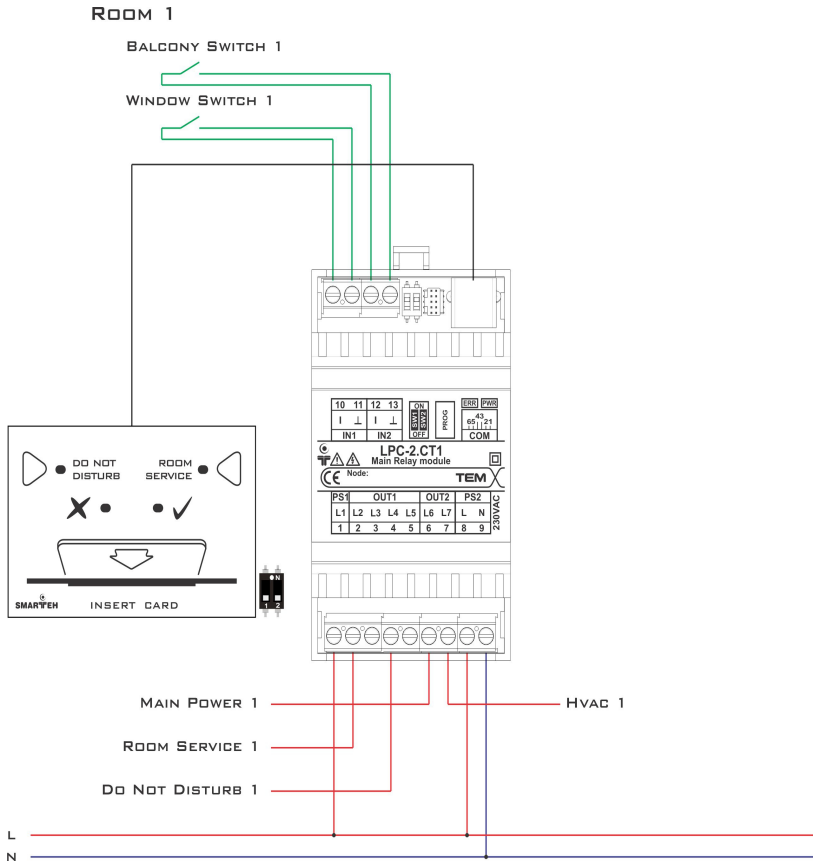


Figure 3: Connection scheme for controlling two rooms

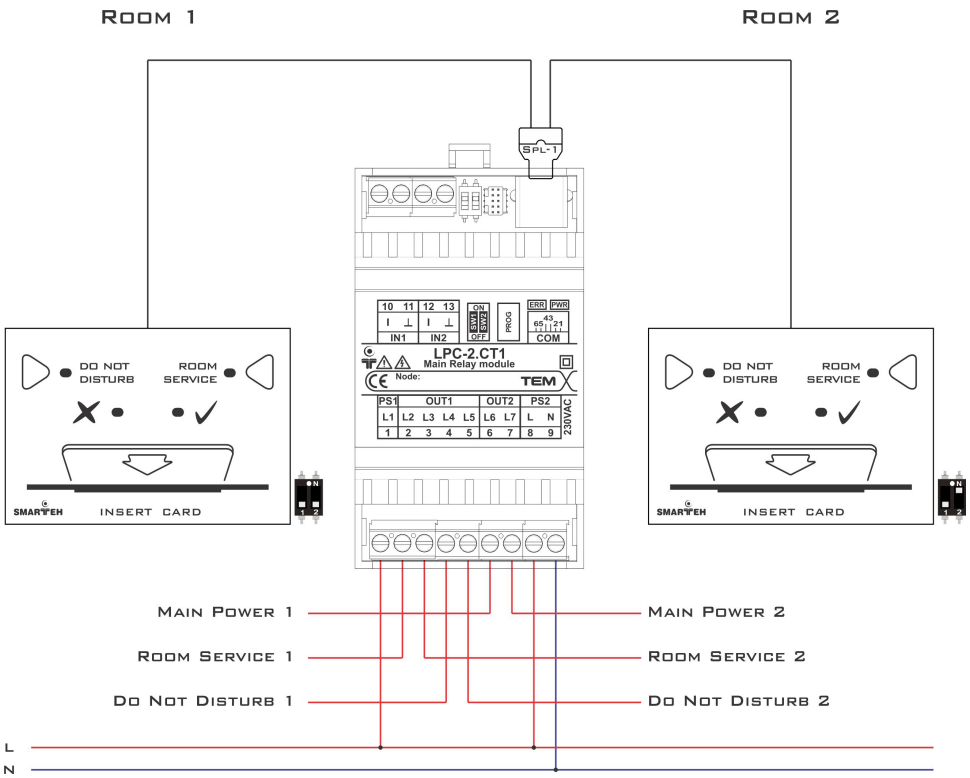


Figure 4: Connection scheme

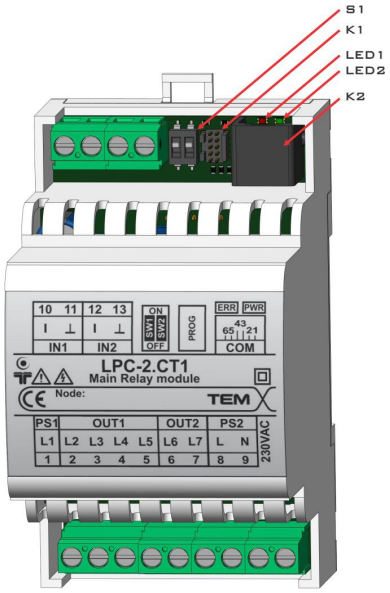


Table 2: Power supply[1]

PS1.1 (L1)	Max 250 V AC	Common supply for OUT1
PS2.8 (L)	100 .. 250 V AC, 50/60 Hz	Power supply (L – line) and common AC supply (L – line) for OUT2
PS2.9 (N)	Neutral	Power supply (N – line)

Table 3: OUT[2]

OUT1.2 (L2)	Room service 1 relay output	Make contacts (NO)
OUT1.3 (L3)	Room service 2 relay output	Make contacts (NO)
OUT1.4 (L4)	Do not Disturb 1 relay output	Make contacts (NO)
OUT1.5 (L5)	Do not Disturb 2 relay output	Make contacts (NO)
OUT2.6 (L6)	Main power 1 relay output	Make contacts (NO)
OUT2.7 (L7)	Main power 2 or HVAC 1 relay output	Make contacts (NO)

1 L and N supply wiring: power supply wires must have cross sectional area of at least 2.5 mm^2. Minimum temperature rating of wire insulation must be 85 °C. Use copper conductors only.
L1 supply wiring: wires must have cross sectional area of at least 1.5 mm^2. Minimum temperature rating of wire insulation must be 85 °C. Use copper conductors only.

2 Wires connected to the L2, L3, L4 and L5 must have cross sectional area at least 1.5 mm^2. Minimum temperature rating of wire insulation must be 85 °C. Use copper conductors only.
Wires connected to the L6 and L7 must have cross sectional area at least 2.5 mm^2. Minimum temperature rating of wire insulation must be 85 °C. Use copper conductors only.

Table 4: IN[3]		
IN1.10 (I)	Window switch 1 input	Pull-up configuration
IN1.11 (⊥)	GND	Ground
IN2.12 (I)	Balcony switch 1 input	Pull-up configuration
IN2.13 (⊥)	GND	Ground

Table 5: K1		
K1	Programming connector	Factory use only

Table 6: K2		
K2.1	GND	Ground
K2.2	15 V DC	Power supply output
K2.3	Standard RS-485	Data receive/send line A
K2.4	Standard RS-485	Data receive/send line B

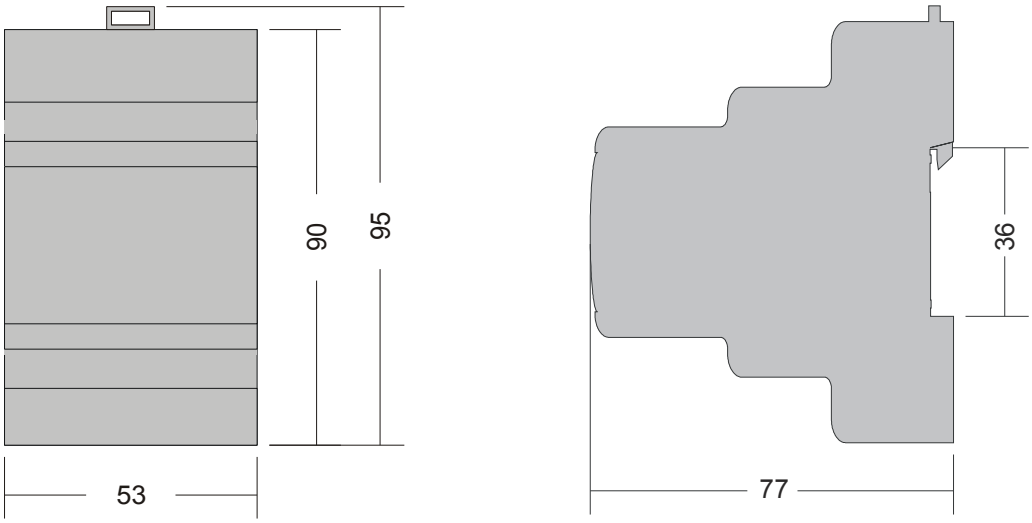
Table 7: S1		
Switch 1	Operation mode switch	ON: 2 rooms OFF: 1 room + HVAC
Switch 2	Additional switch	Not used

Table 8: LEDs		
LED1: red	Communication	ON: RS-485 communication fault OFF: RS-485 communication OK
LED2: green	Power supply	ON: power supply OK OFF: power supply missing or power off

3 Wires connected to the module must have cross sectional area at least 0.75 mm^2. Minimum temperature rating of wire insulation must be 85 °C. Use copper conductors only.

5.2 Mounting instructions

Figure 5: Housing dimensions



Dimensions in milimeters.

EXTERNAL SWITCH OR CIRCUIT-BREAKER AND EXTERNAL OVERCURRENT PROTECTION: The unit is allowed to be connected to installation with over current protection that has nominal value of 16 A or less.
RECOMMENDATION ON SWITCH OR CIRCUIT-BREAKER PROTECTION: There should be two poles main switch in the installation in order to switch off the unit. The switch should meet the requirements of standard IEC60947 and have a nominal value at least 6 A. The switch or circuit-breaker should be within easy reach of the operator. It should be marked as the disconnecting device for the equipment.
All connections, module attachments and assembling must be done while module is not connected to the main power supply.
Wires connected to the module must have cross sectional area at least 0.75 mm^2.
Minimum temperature rating of wire insulation must be 85 °C

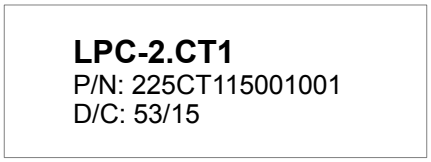
1. Switch OFF main power supply.
2. Mount module to the provided place inside an electrical panel (DIN EN50022-35 rail mounting).
3. Connect needed input, output and communication wires.
4. Switch ON main power supply.

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.

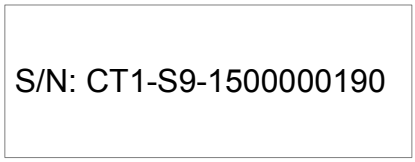
5.3 Module labeling

Figure 6: Labels on housing

Label 1 (sample):



Label 2 (sample):



Label 1 descriptions:

1. **LPC-2.CT1** is the full product name.
2. **P/N: 225CT115001001** is the part number.
   - **225** – general code for product family,
   - **CT1** – short product name,
   - **15001** – sequence code,
     - 15 – year of code opening,
     - 001 – derivation code,
   - **001** – version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C:16/11** is the date code.
   - **53** – week and
   - **15** – year of production.

Label 2 descriptions:

1. **S/N: CT1-S9-1500000190** is the serial number.
   - **CT1** – short product name,
   - **S9** – user code (test procedure, e.g. Smarteh person xxx),
   - **1500000190** – year and current stack code,
     - 15 – year (last two cyphers),
     - 00000190 – current stack number; previous module would have the stack number 00000189 and the next one 00000191.

6 TECHNICAL SPECIFICATIONS

Table 8: Technical specifications	
Power supply	100 .. 250 V AC, 50/60 Hz
Power consumption	max. 5 W (with two Card Holder module)
Card holder	LPC-2.CH1M or LPC-2.CH1
Number of digital inputs	2
Input threshold	”ON”: <1 kΩ “OFF”: >20 kΩ
Number of digital outputs	8 relay make contacts (NO)
Output current per each OUT1 channel	1 A
Output current per each OUT2 channel	16 A
Connection type	screw type connector for stranded wire 0.75 to 2.5 mm^2
Dimensions (L x W x H)	90 x 53 x 77 mm
Weight	200 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
Over-voltage 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.CT1 Main Relay module	
LPC-2.CT1	P/N: 225CT115001001

LPC-2.CH1 Card Holder module	
LPC-2.CH1	P/N: 225CH115V02W02

LPC-2.CH1M Card Holder module	
LPC-2.CH1M	P/N: 225CH115V04W02

Splitter	
SPL-1 (1/2)	P/N: 206SPL04001001

Interconnection cable	
ICM-x	P/N: 203ICMxxxxxxxx

8 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
22. 2. 2016	001	The initial version, issued as LPC-2.CT1 User Manual.

9 NOTES